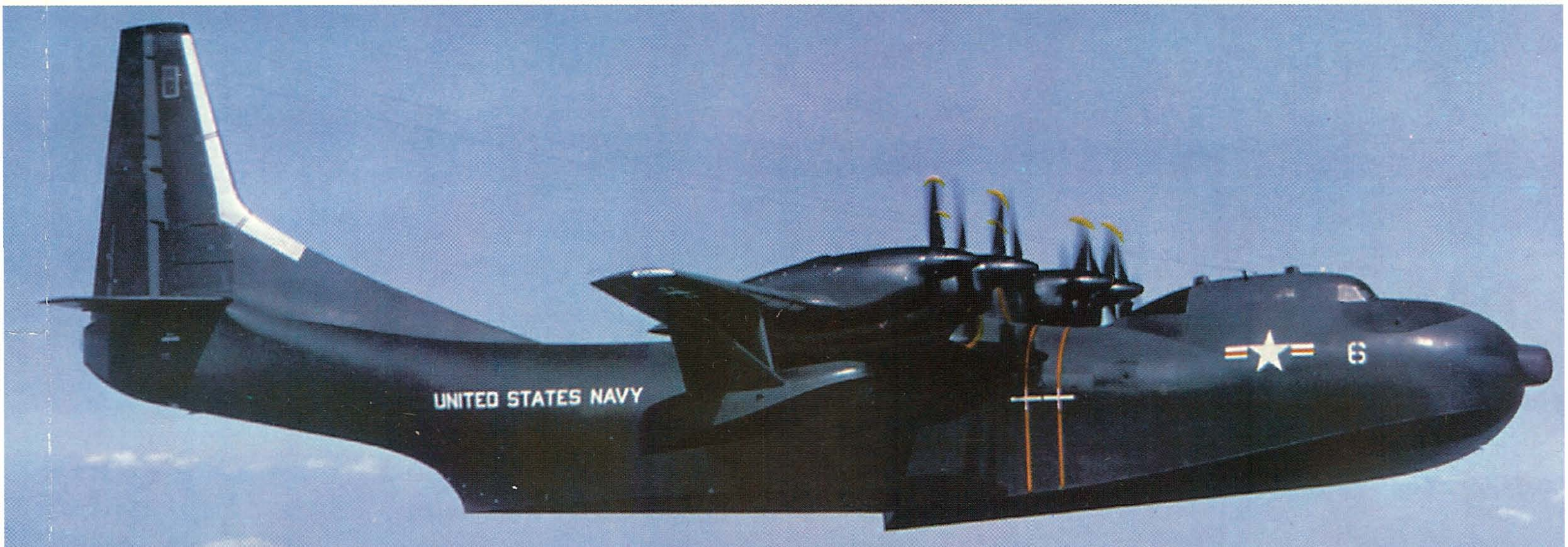
NAVAL FIGHTERS NUMBER THIRTY-FOUR

Convair
XP5Y-1 & R3Y-1/-2
TRADEWIND



BY STEVE GINTER

FRONT COVER: Top, R3Y-2 128450 bow-loader troop transport. Bottom, R3Y-1 128447 cruiser-bow transport,

BACK COVER: XP5Y-1 prototype. Middle, R3Y-1 128445 conducting aerial refueling feasibility tests with VF-91 Cougars. Bottom, R3Y-2 131723 from VR-2 refuels VMCJ-3 F9F-8P 144386 on 17 December 1957. (Clay Jansson)

At right, first flight Air Mail envelopes for the XP5Y-1 (top) and the R3Y-1 Tradewind (bottom). (via Johnny Knebel)

Anyone having photos or other information on this or any other naval or marine aircraft, may submit them for possible inclusion in future issues. Any material submitted will become the property of NAVAL FIGHTERS unless prior arrangement is made. INdividuals are responsible for security clearance of any material before submission.

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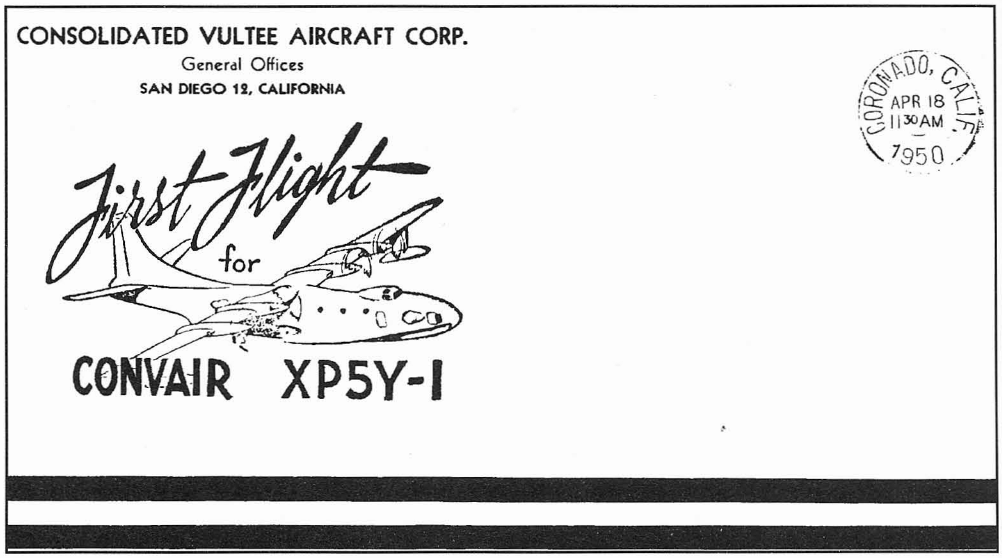
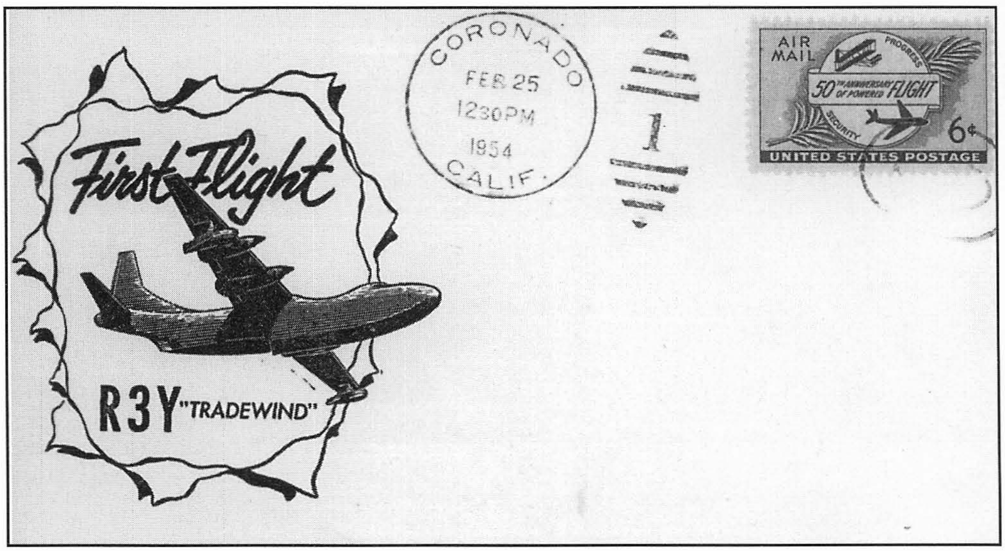
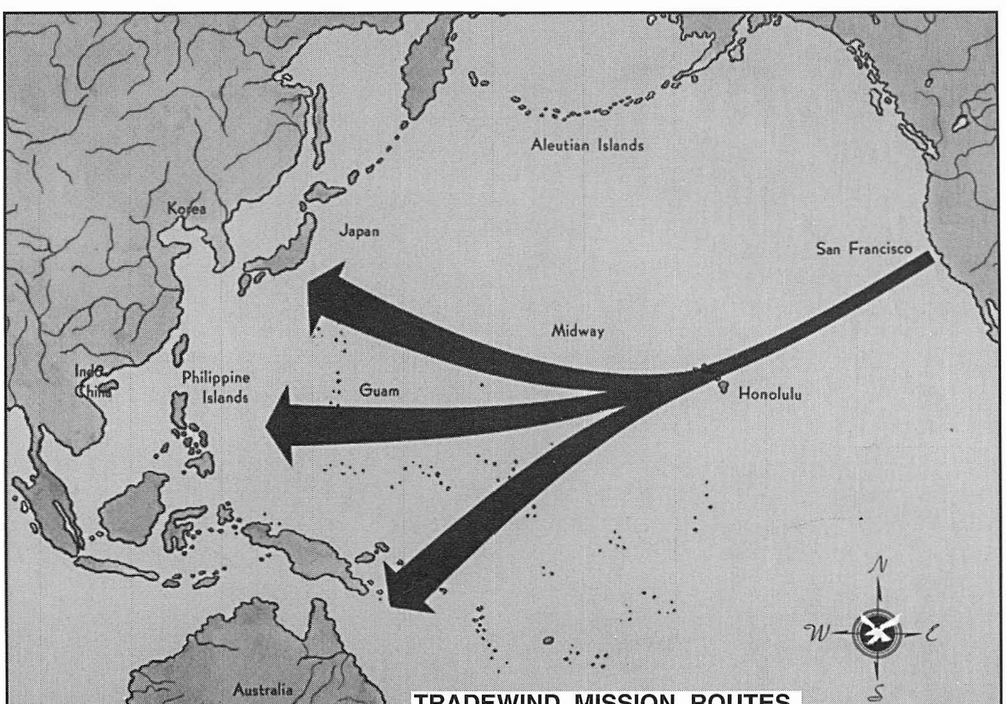
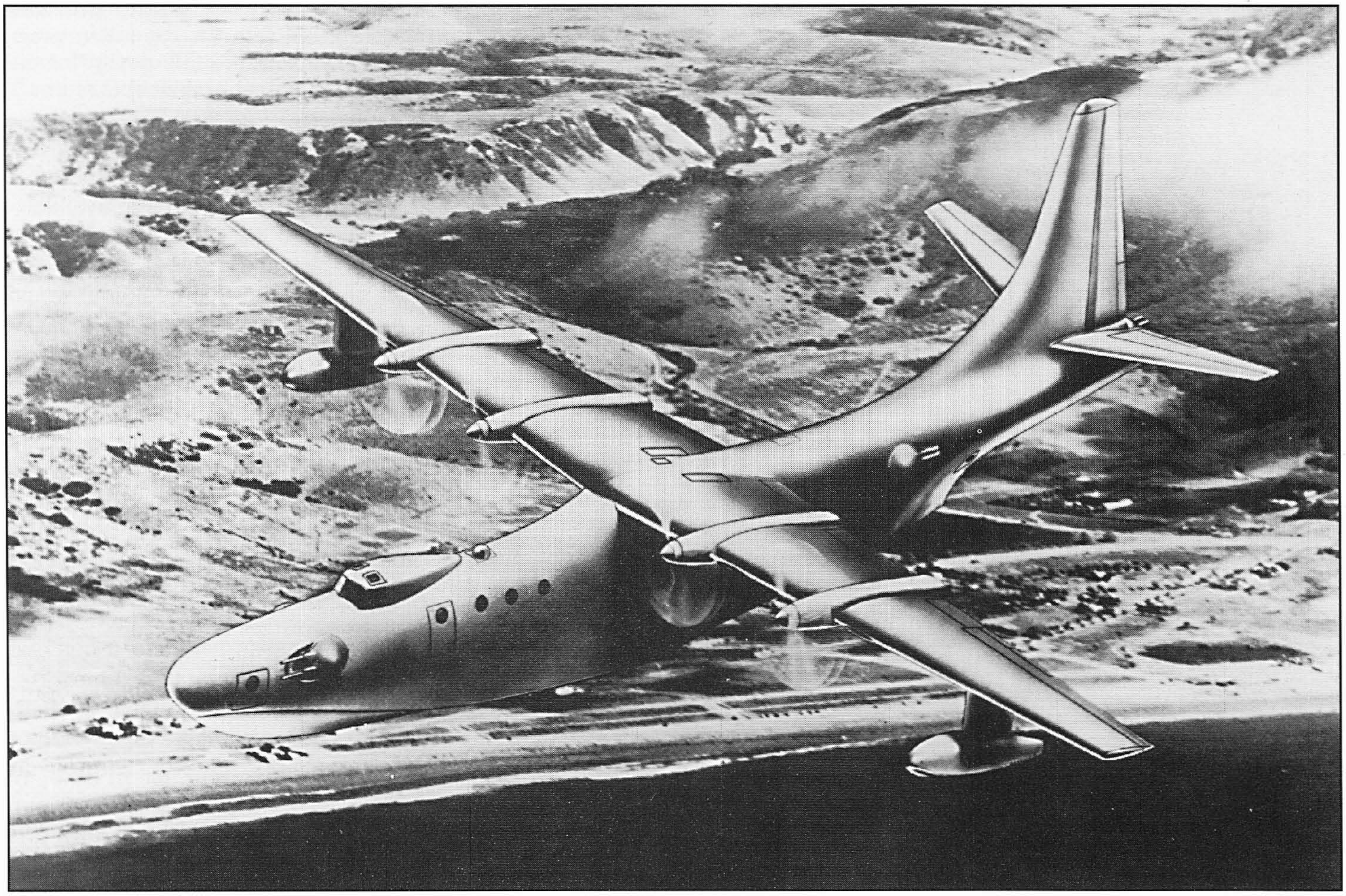






TRADEWIND MISSION ROUTES

CONVAIR P5Y AND R3Y TRADEWIND FLYING BOATS

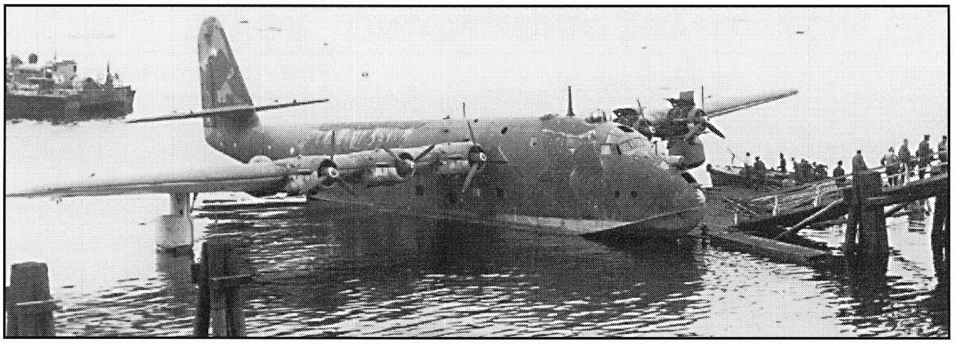


1948 artist's impression of the completed turboprop XP5Y-1 in flight with its four twin-gun fuselage barbettes and its twin tail guns. (Nat. Archives)

The origins of the Tradewind can be traced back to 1943 through the activities of Ernie Stout, the aircraft's project engineer. Consolidated Aircraft was well known for its famous PBY Catalina series of patrol aircraft, and by 1943 was involved with the much larger PB4Y Coronado series. In an effort to help improve the poor hydrodynamic qualities of the Coronado, dynamically similar models were put to use to test changes to existing aircraft and new concepts. Stout, who had been using models for testing since 1938, established the hydrodynamic research laboratory at Consolidated-Vultee's (Convair) San Diego plant, where he conducted research through the use of radio controlled and towed large scale model aircraft. Independent of Stout's research, the National Advisory Committee for Aeronautics (NACA) and the Stevens Institute (SIT) had developed some revolutionary hull shapes. BuAer was so keenly interested in developing a new patrol flying boat incorporating the best of these designs that in 1944 they awarded Convair a research contract for a new family of high performance seaplanes in the 150,000 pound class. These evolving hull designs promised to eliminate skipping and porpoiseing, reduce spray and improve rough water handling.

On 20 December 1944, the industry was asked to enter a design competition for a 105,000 pound patrol boat powered by four Pratt & Whitney R-2800 radials. In January 1945, the proposal was amended to include antishipping, anti-submarine warfare and air-search and rescue. Ultimately, the project was cancelled when the submitted designs were deemed marginally superior to existing aircraft. The concept was resurrected on 27 December 1945 in the form of a 165,000 pound boat with improved hull design and four turboprop engines to significantly improve performance. In 1945, Ernie Stout was a member of the U. S. Technical Mission to Europe. He brought back confirmation that the Convair hull design conclusions in the form of BV-222 "Wiking" data. This data was incorporated in Convair's proposal, the XP5Y-1, which was selected over designs submitted by Hughes and Martin.

The XP5Y-1 was not the first aircraft to be designated P5Y-1. The first P5Y-1 was the Consolidated solution for a replacement for the PV Ventura/Harpoon naval patrol landplane. The P5Y-1 proposal was essentially a twin engined R-3350 B-24/PB4Y-1. The project was dropped and the single-tailed PB4Y-2

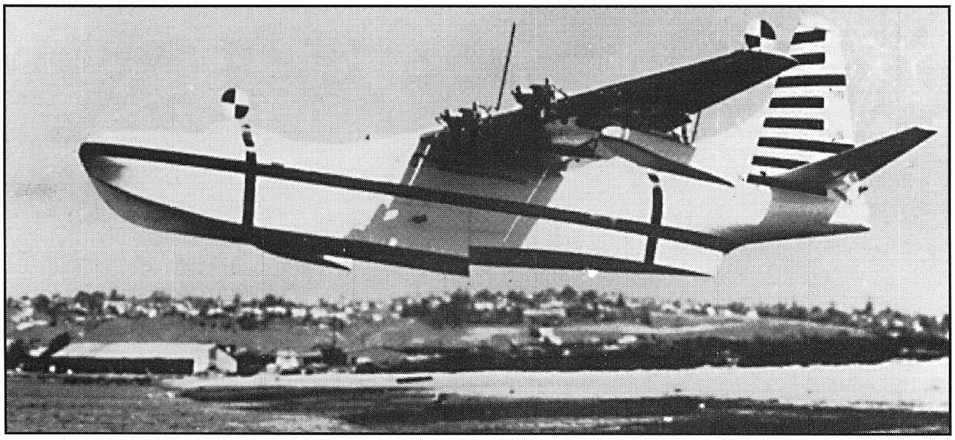


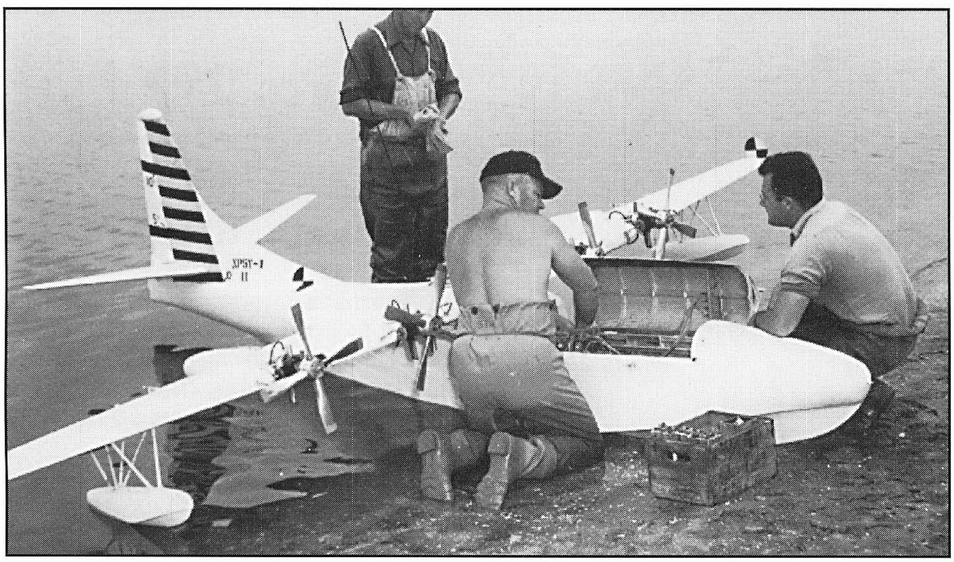
At left, the BV-222 Wiking shown at Trondheim Fjord in 1945, which was taken back to Patuxent River, MD., by the U. S. Navy for testing provided Earnie Stout with the validation needed to complete the hull design of the XP5Y-1. (National Archives)

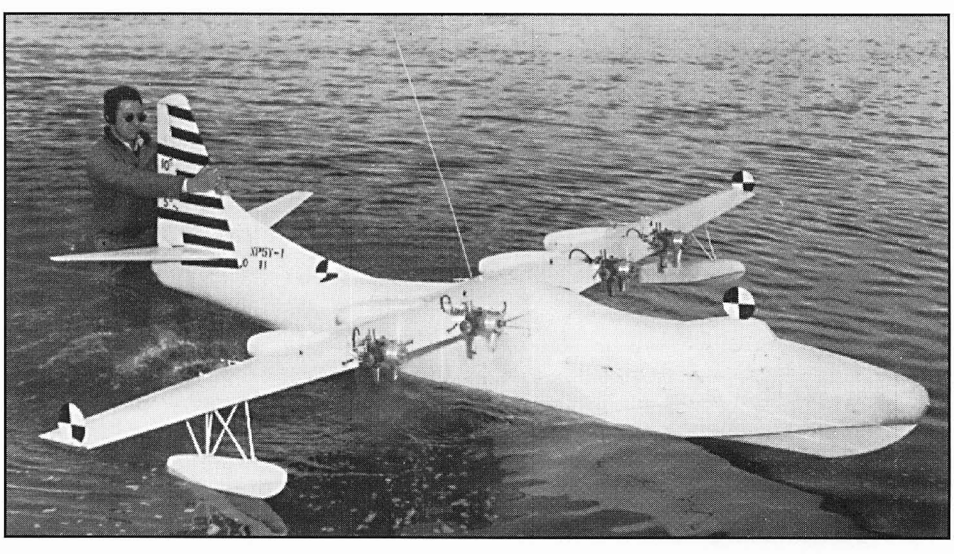
Privateer was developed for that mission. The reason being that availability of the R-3350 was suspect due to its high demand in other aircraft and that minimal development time would be needed in adapting the B-24/PB4Y-1 to the maritime patrol mission. An extensive upgrade in armament was the only change deemed necessary to correct the design's deficiencies for the mission. Even though the Navy dropped the project in favor of the PB4Y-2 Privateer, the Vega proposal developed into the P2V-1 Neptune of the 1950s.

Convair was awarded a contract for two XP5Y-1 maritime patrol aircraft, model 117, in August of 1946. The XP5Y-1 would take advantage of the years of research started at Convair's hydrodynamic research laboratory. Convair built and operated the first radio controlled dynamic free body research airplane in the world, a 1/8 scale model of the P4Y-1 patrol seaplane which was still being utilized as late as 1949. The models of the XP5Y-1 were constructed in 1/10 scale and utilized well into the 1950s. Models were tested both at NACA and Convair, where the XP5Y-1 went through 27 configuration changes and duplicated the entire hydrodynamic test program proposed for the full scale XP5Y-1.

As the development and construction of the XP5Y-1 progressed, two things happened: engine development problems delayed the first flight and subsequent flight testing by over three years, and the end of the war brought about the evaluation of future naval missions in the post-war environment. The evaluation left the

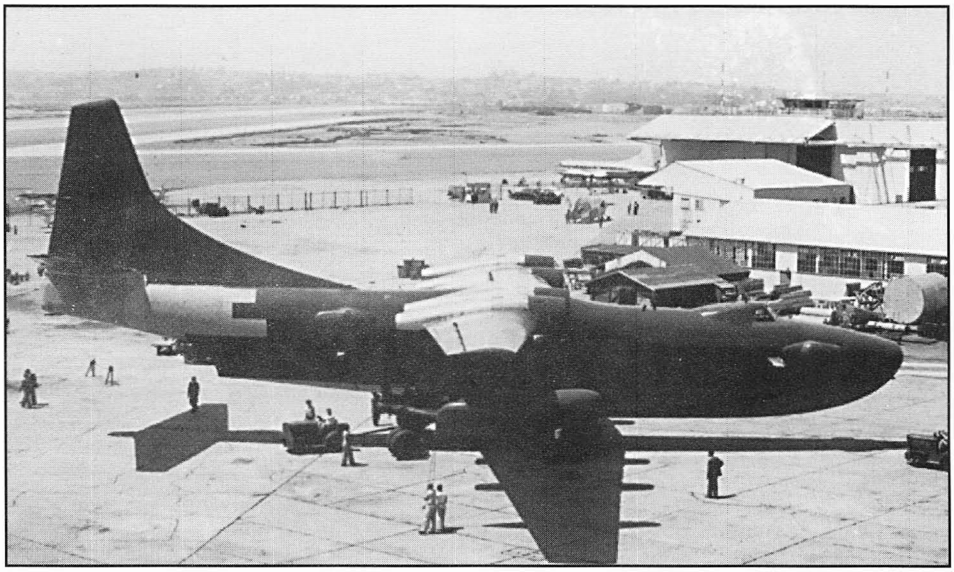




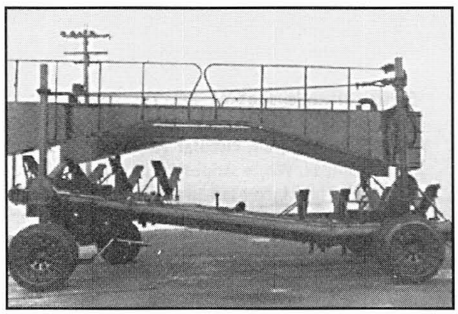


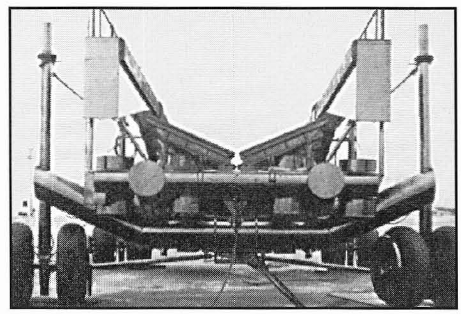
At left, three photos of the early XP5Y-1 flying model used primarily to test and develop the final XP5Y-1 hull design. (via Combat Models)

At right, the completed engineless XP5Y-1 prototype after rollout in December 1948. note bare metal wing and after-fuselage. Because of engine delays, the XP5Y-1 did not make its first flight until 18 April 1950. (via Combat Models)



At right, two views of the beaching cradle for the XP5Y-1, which was vastly different than that used on the R3Y-1/2.



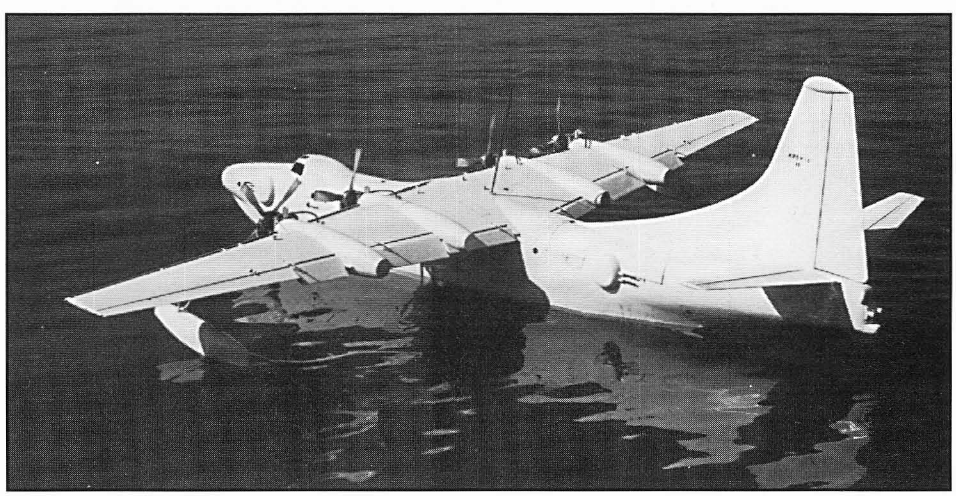


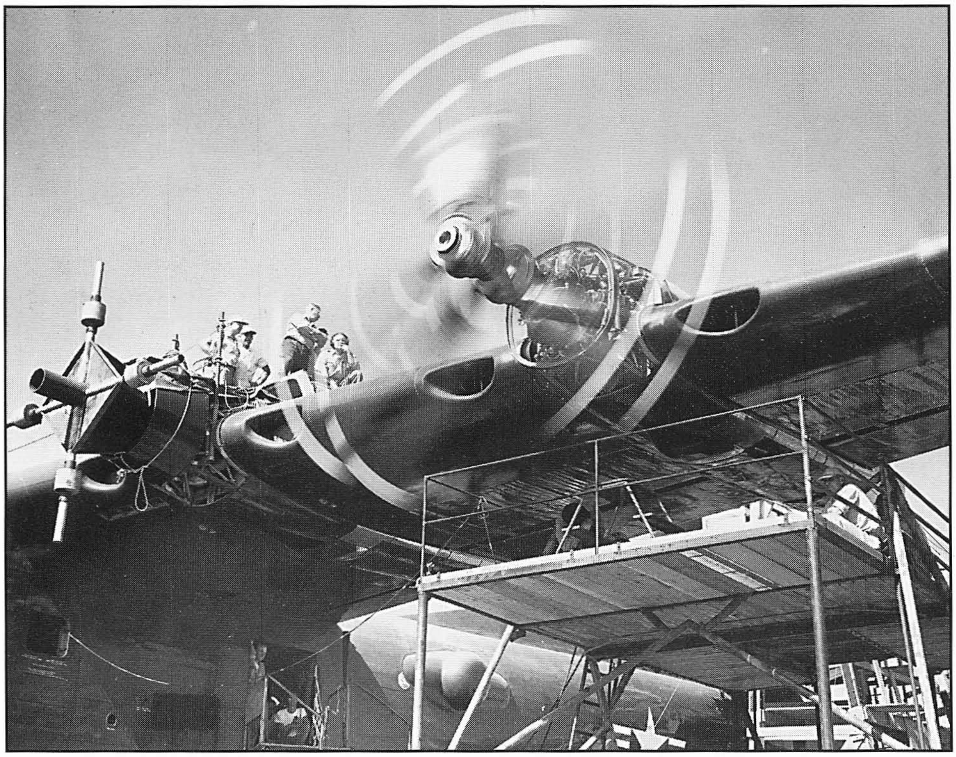
XP5Y-1 missionless, as a requirement no longer existed for a large flying boat in the long range patrol, mine laying or ASW roll. However, repeated solicitations by Convair, and the perceived need for a large flying boat to replace the Martin Mars, which was created by the establishment of the Military Air Transport Service, resulted in the continuation of the project and a redesign of the hull for use as a transport. During 1948 and 1949 no naval transports were ordered, but the invasion of South Korea in June 1950 ensured the production of the R3Y Tradewind transports. 59 transports, including 6 R3Y-1s were ordered by the end of 1950 and 158 transports including another 5 R3Y-1s, were ordered in 1951.

The original engines ordered for the XP5Y-1 were four Westinghouse 25D (T30) engines driving Hamilton Standard, super-hydromatic 15' 1" diameter propellers. However, engine problems in development of the Westinghouse turboprops were so severe that the even more experimental Allison T-40s were substituted in the XP5Y-1. Even Convair was so worried that the engines would not be developed, that they proposed the R3Y with R-3350s instead. A copy of the 27 July 1950 comparison is listed as follows:

At right, second from bottom, the second prototype XP5Y-1 after completion in June 1949. Engines were still not available. (via Bob Lawson)

At right, because no engines were available for flight testing, Convair completed an exact replica 1/10 scale model down to the gun turrets. Testing of the model continued up until the prototype first flew in 1950. (National Archives 12-30-48)





At left, initial engine ground tests conducted without gearbox cowling or spinner installed. The openings on either side of the engines are the air intakes for the turboprops. (via SDAM)

	T-40	R-3350-30W
Payload (90 troops)	26,000 lbs	26,000 lbs
Combat range N. M. (at 10,000 ft)	2,400	2,400
Take-off gross wt.	159,953	131,500
Take-off time, sec.	25.5	50
Maximum speed		
sea level	345 kts	252 kts
10,000 ft	355 kts	250 kts
Cruise speed	208 kts	172 kts
Time for 2,400 N. M.	11.6 hrs	14 hrs
Rate of climb at S. L. ft/min	2,750	1,010
Fuel, lbs	55,800	32,700

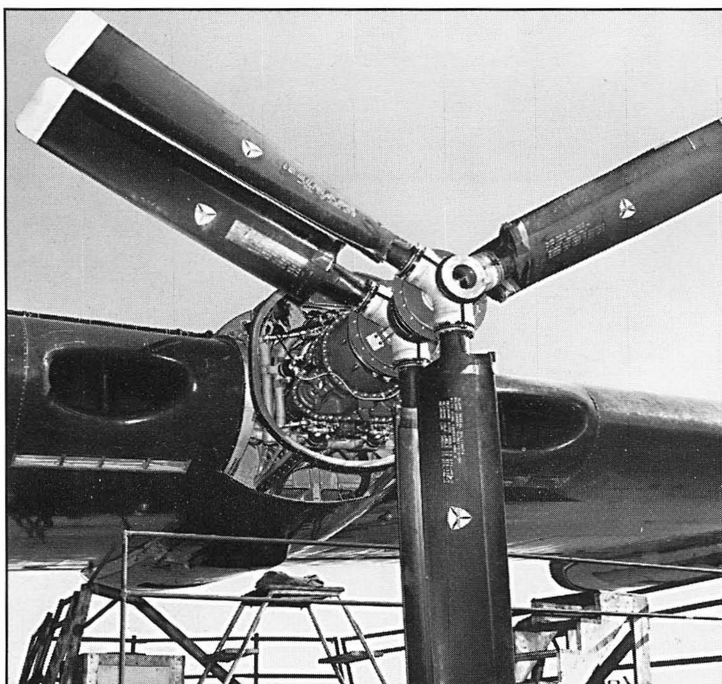
When the XP5Y-1 was ordered in August 1946, the contract called for one stripped flight test article and one complete combat equipped aircraft, with completion of the first aircraft scheduled in 26 months. The protracted engine development delayed the first flight of the XP5Y-1 until 18 April 1950, 18 months after the original contract completion date. The two airplanes were covered by contract NOa(s)-8347. The second aircraft was to weigh-in at 123,500 pounds and have five twin 20 mm gun turrets.

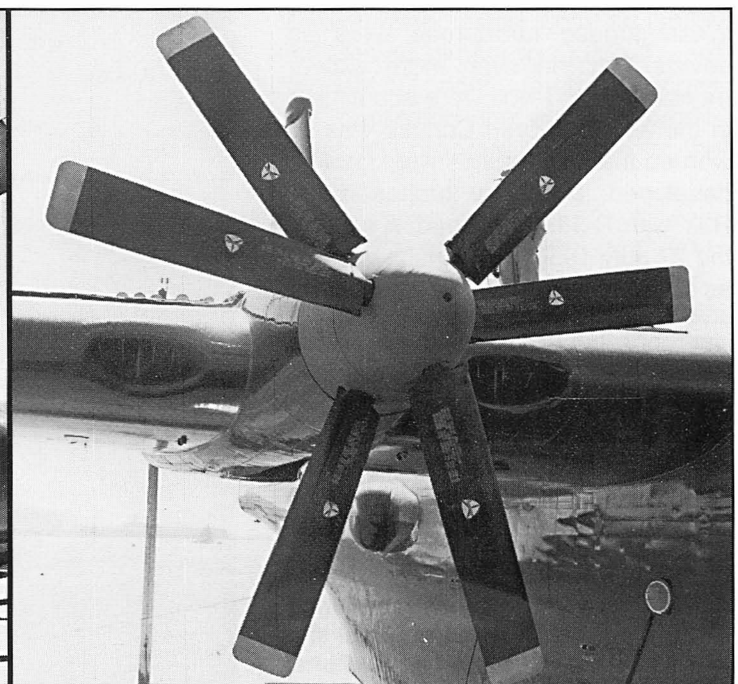
Airframe construction started in February 1947 and the Westinghouse 25D engine order was formally cancelled and replaced with four Allison XT40 engines driving six bladed conterrotating props via two long three-section driveshafts. The first XP5Y-1, BuNo 121455, was finished awaiting engines in December 1948. The second aircraft, BuNo 121456, was completed in June 1949. At this point, Convair requested permission to use R-4360 engines on the second prototype to start flight testing. Initially, this request was granted, but was cancelled before Convair could act on it.

Chief test pilot "Sam" Shannon, with Don Germeraad as co-pilot and

Below left, close-up of propellers and gearbox without cowling or spinner. (via SDAM)

Below, close-up of propellers with spinner and cowling installed. The XP5Y-1 had a thicker wing than the R3Y and the engines were almost completely buried in the wing structure. (National Archives)

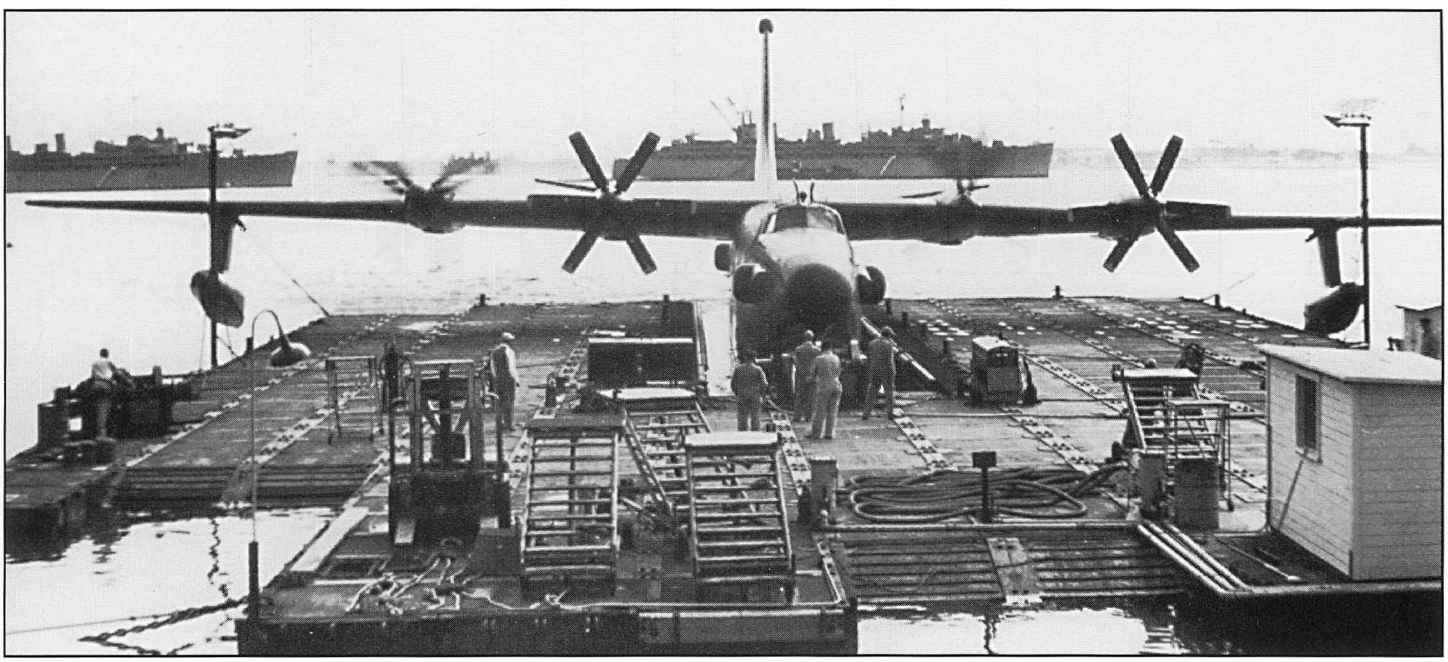


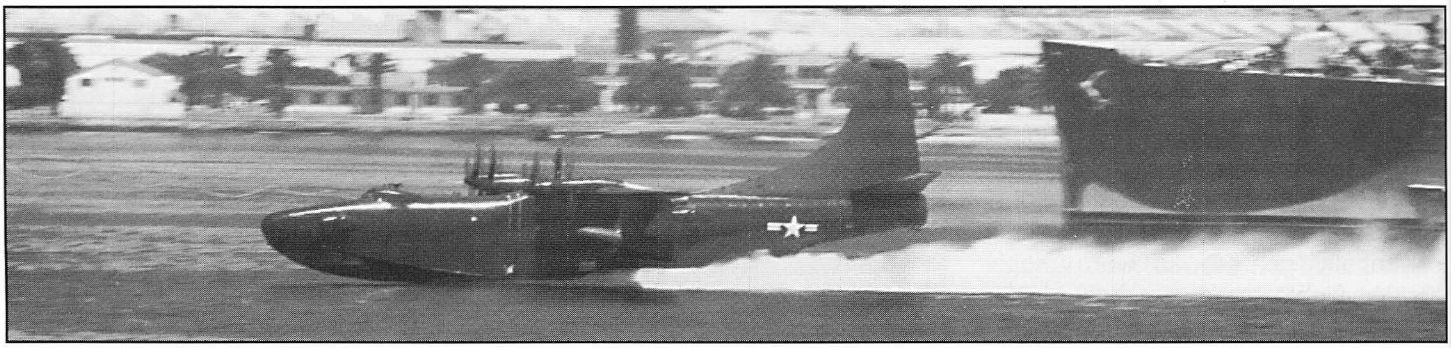


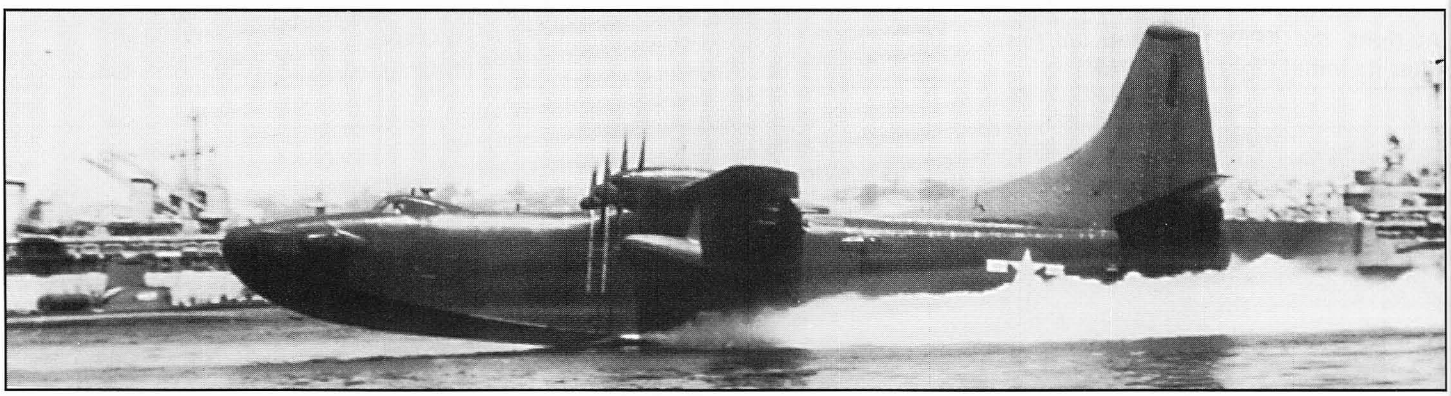
Above and below, the XP5Y-1 warms up its engines in preparation for its first flight on 18 April 1950. The aircraft was operated from its specially designed floating dock. (National Archives)

Bob McGeary as flight engineer, took off on the first XP5Y-1 flight at 1136 hours on 18 April 1950. The first flight lasted only 29 minutes and was essentially geared, as were most XP5Y-1 flights, to development of the XT40. The XT40-4 had been averag-

At right, the XP5Y-1 docked tail first after its initial flight. (via SDAM)







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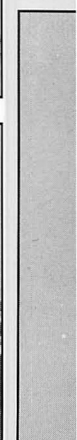
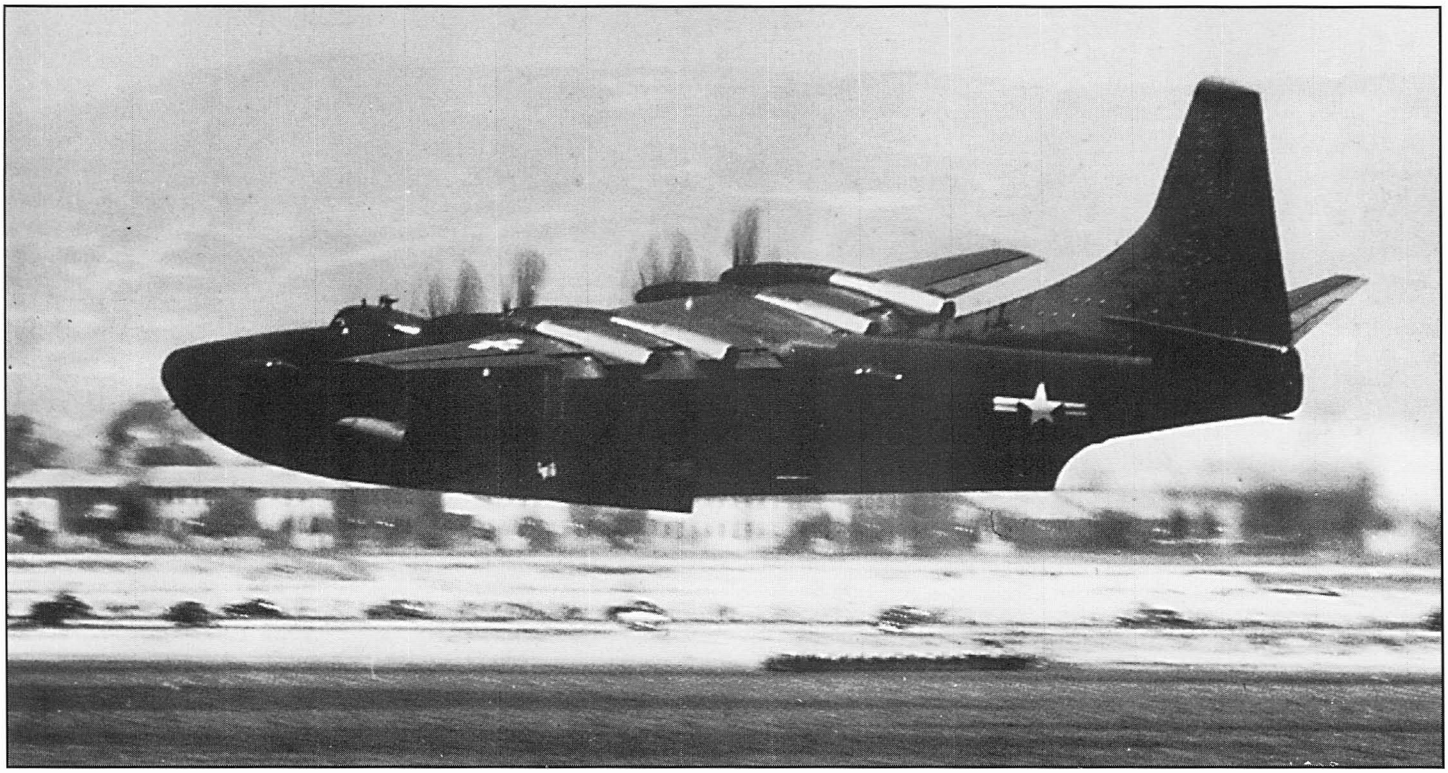
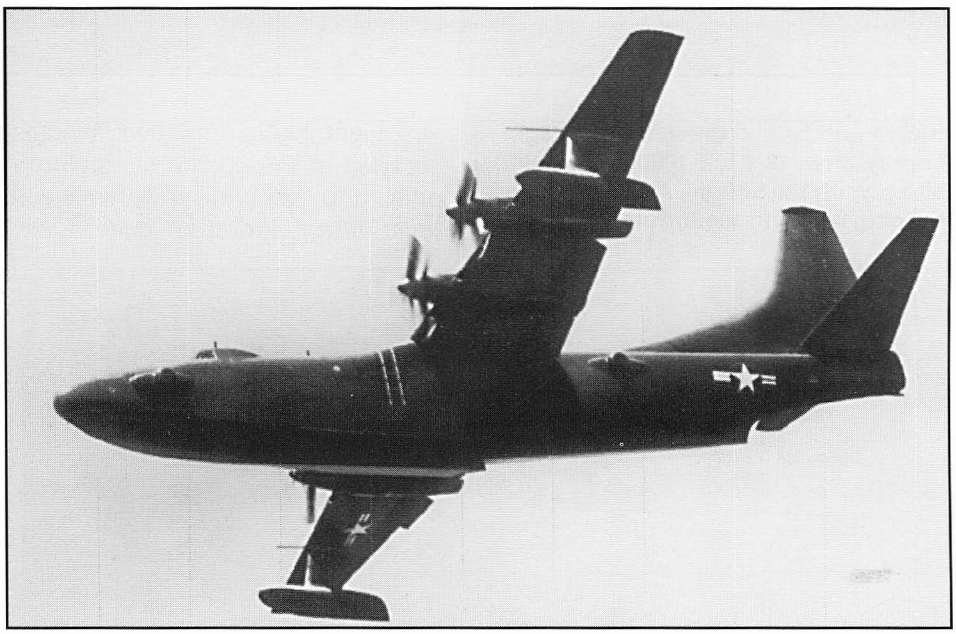


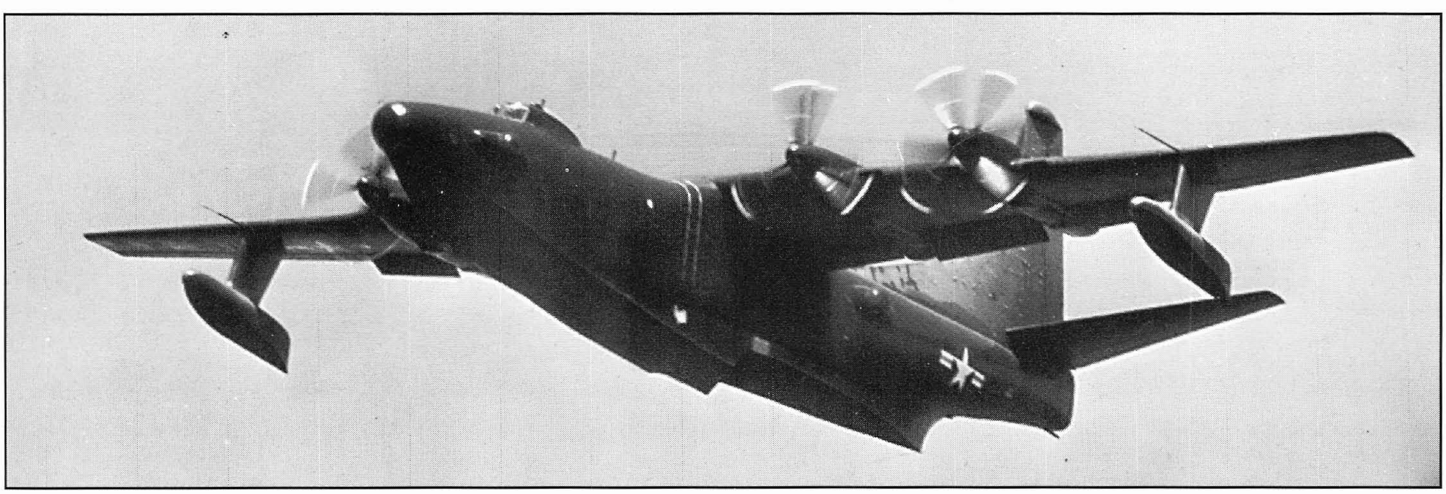


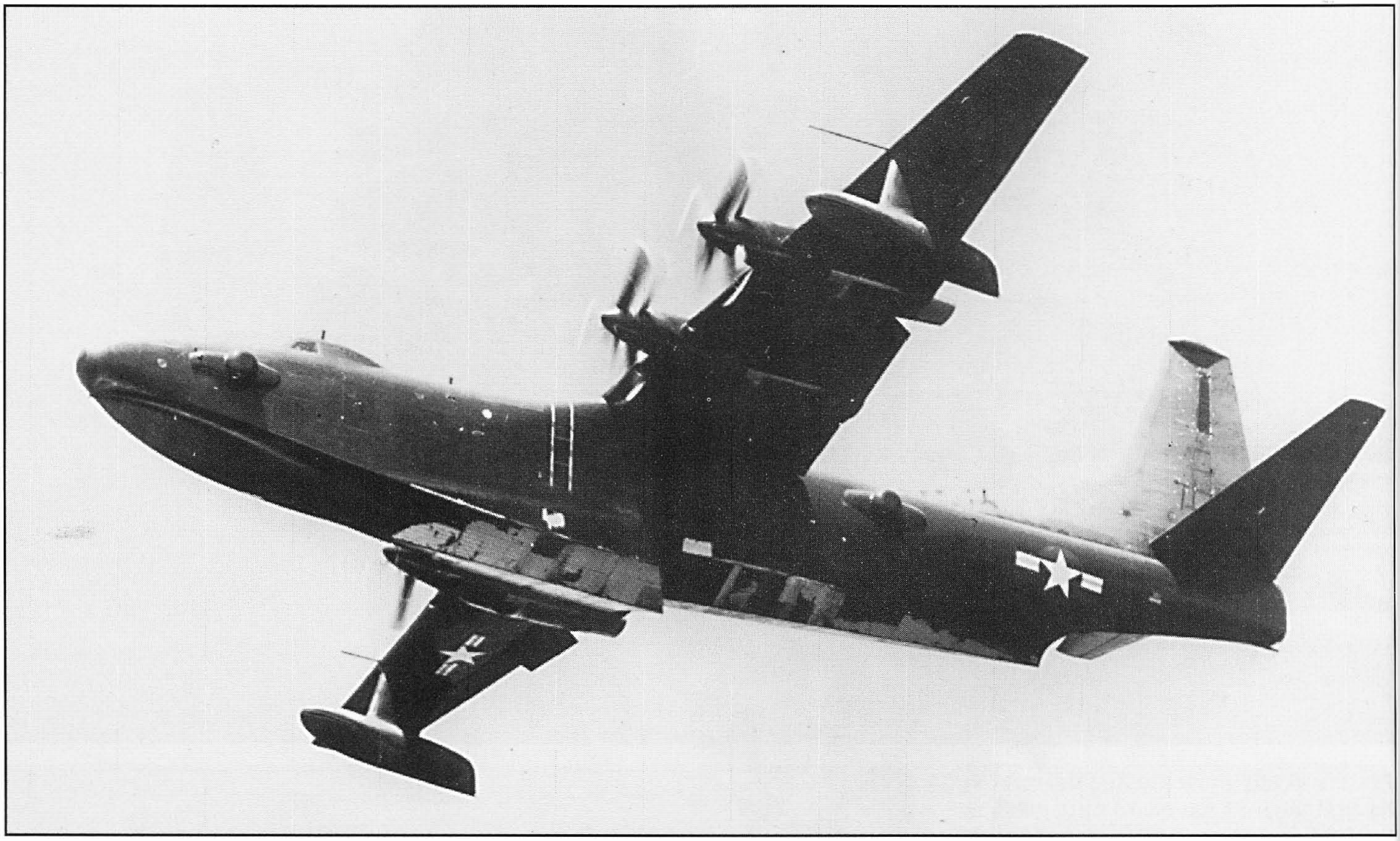
Photos at left show the XP5Y-1 making its first take-off run on 18 April 1950 as it passes anchored Navy warships in San Diego Bay. The aircraft had sat outside for two years waiting for this moment and corrosion is evident on the vertical tail. (National Archives)

ing less than 10 hours time between overhaul, and problems with the fuel and prop control added to the slow test program. The longest flight achieved during the XP5Y-1 program



Above, the XP5Y-1 thunders down San Diego Bay, Note natural metal after-engine sections. At right, the XP5Y-1 overflys the bay. (National Archives) Below, the XP5Y-1 makes a high speed pass. (via Fred Roos)





Above and below, the XP5Y-1 in flight shortly after 18 April 1950, with paint stripped off the bottom. Armament was never installed in the turrets. (N.A.)

was eight hours and five minutes. Because of the engine supply problems, the second prototype was never flown and the decision was made to continue testing the first aircraft until all engines on order were depleted. However, before this happened the aircraft was lost on 15 July

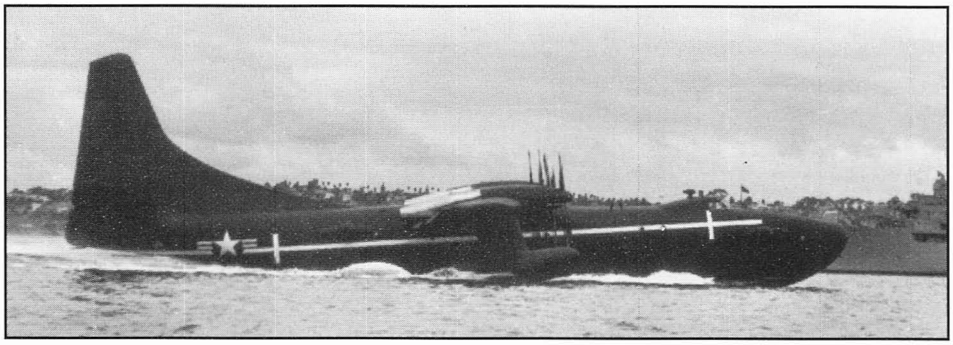
1953. With Don Germeraad at the controls, the elevator torque tube broke on the 42nd flight during a high speed flutter at 10,000 feet. Without elevator control, the aircraft made a 25-minutelong series of zoom climbs and dives before the crew of eleven bailed out. After the crash, the remaining XT-40 engines were still not fitted to the second aircraft, which was finally scrapped in 1957.

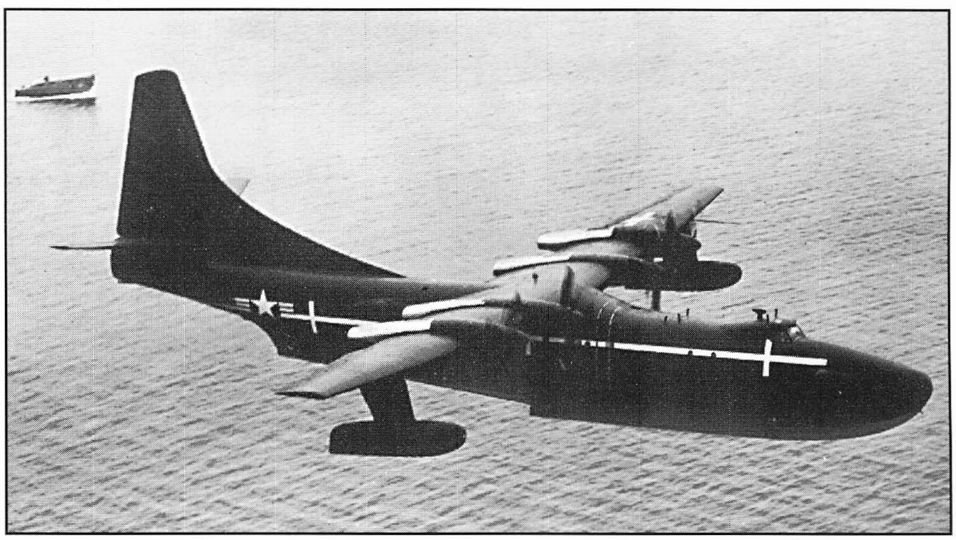
THE XP5Y-1 AIRPLANE

PNEUMATIC SYSTEMS: The XP5Y-1 utilized high and low pressure pneumatic systems rather than hydraulic. The high pressure or primary pneumatic system operated bomb bay doors, engine air duct doors and windshield washers. Air was obtained from two engine-driven compressors for the high pressure system. The low pressure pneumatic system used air supplied by two Air Research gas turbine compressors and a compressor air bleed from the powersection. This system supplied engine starters, oil cooler augmentors and other low pressure requirements.

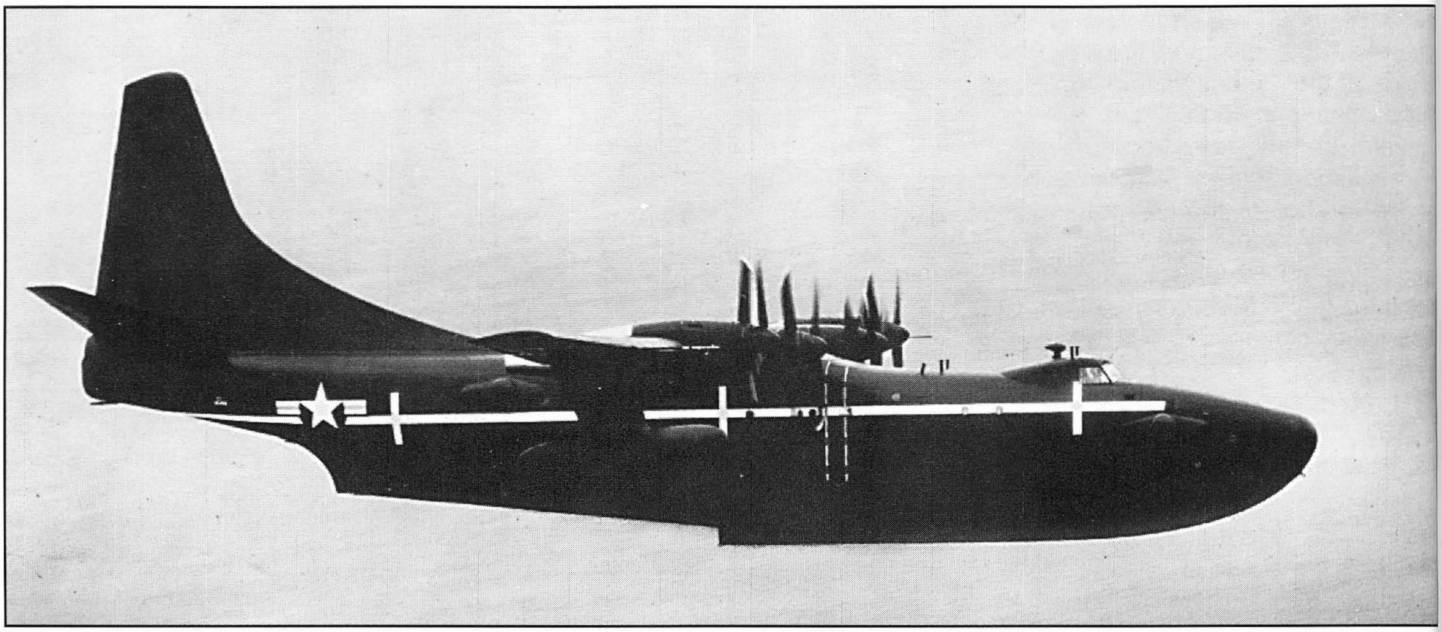
ELECTRICAL SYSTEMS: The airplane had two electrical systems: a standard 24 volt direct current system and alternating current system. The latter was supplied by the Air Research gas turbine compressors, which drove 60 KVA alternators. Direct current was obtained from engine driven generators and storage batteries. Thus, the XP5Y-1 was the first turbine-propelled airplane able to maintain heat, light, radios and all necessary accessories without operating the main engines. This feature made the aircraft ideal for operating in remote harbors or lagoons.

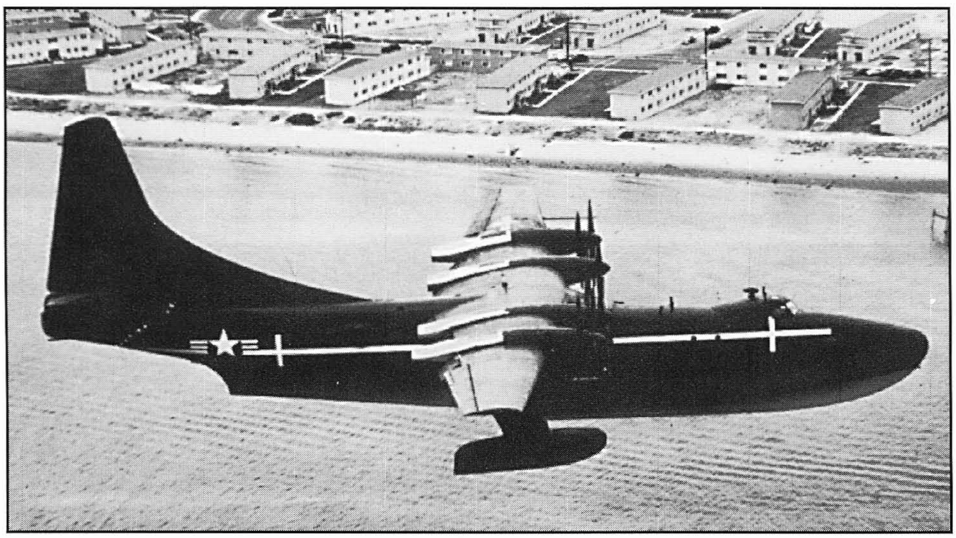
ARMAMENT: Intended defensive armament included four side turrets and a tail turret with 20 mm cannons. The flight deck and engines were planned to have protective armor. The XP5Y-1 could carry bombs, tor-





At right, by 30 June 1950 white photo recognition strips were added to the XP5Y-1. (top and bottom via Combat Models, middle two via Rick Koenen)

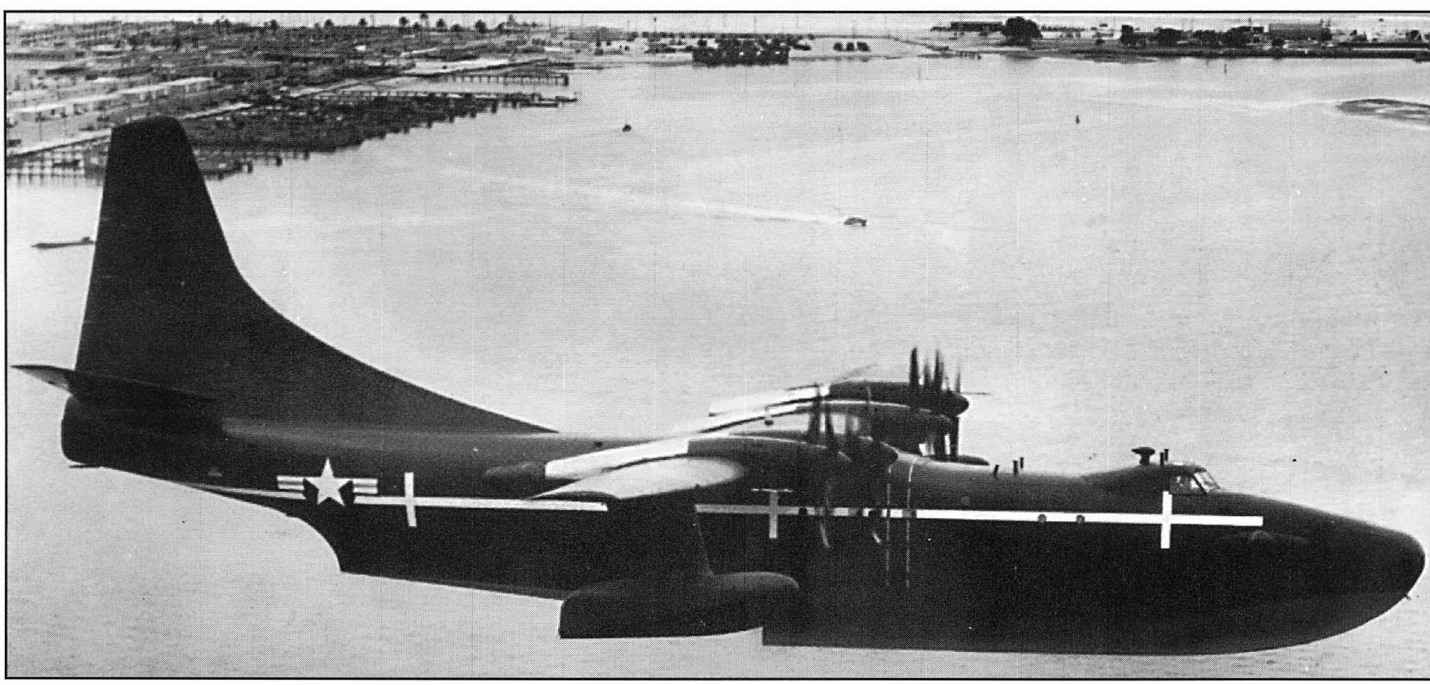




At left and below, the XP5Y-1 passes North Island on its return from a test flight. (Convair)

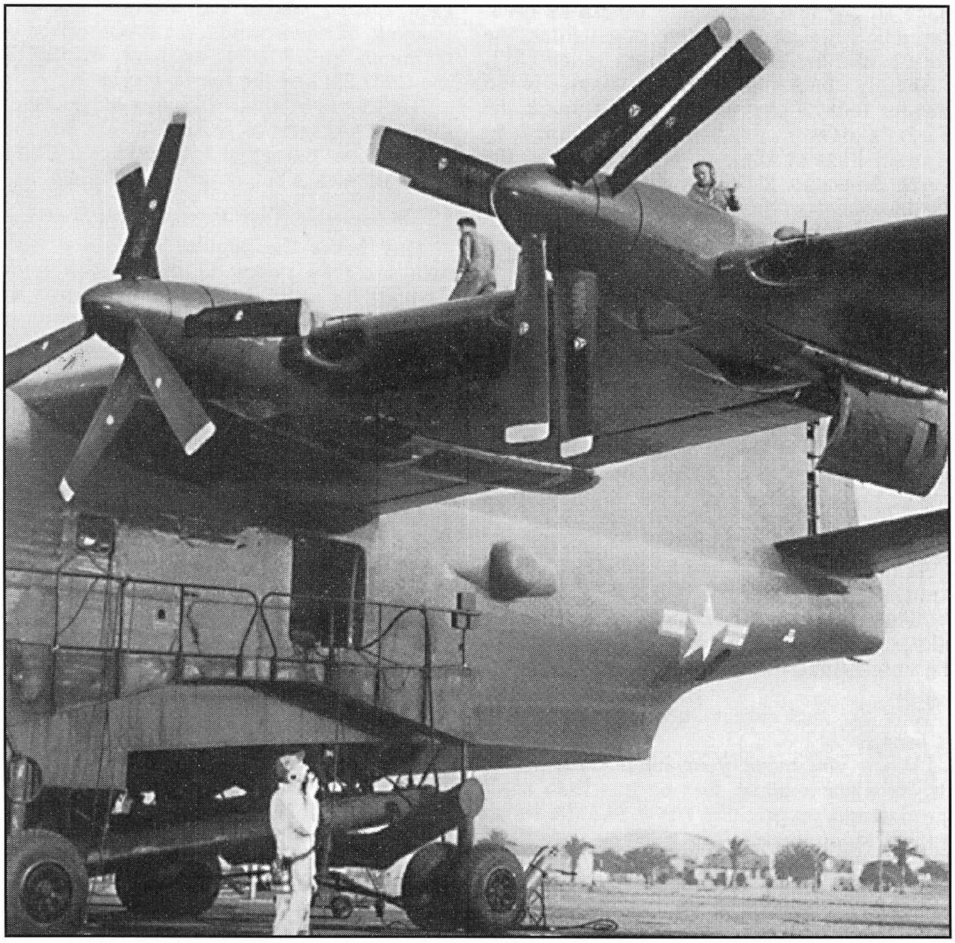
pedoes, sea mines, rockets and other weapons, and was to be fitted with an APS-30 search radar in the nose. The planned search radar was the APS-44. The weapon bays were located in the aft engine nacelles.

FUEL SYSTEM: The XP5Y-1 fuel system included both wing and hull fuel cells. Total fuel capacity was more than 3,000 gal, contained in 21 self-sealing cells.



Above, the XP5Y-1 returning to its dock after its first flight on 18 April 1950. (National Archives) Below, public viewing at NAS North Island on 19 May 1951. The propeller tips were red. Overhead windshield wipers are installed. (via Bob Lawson)

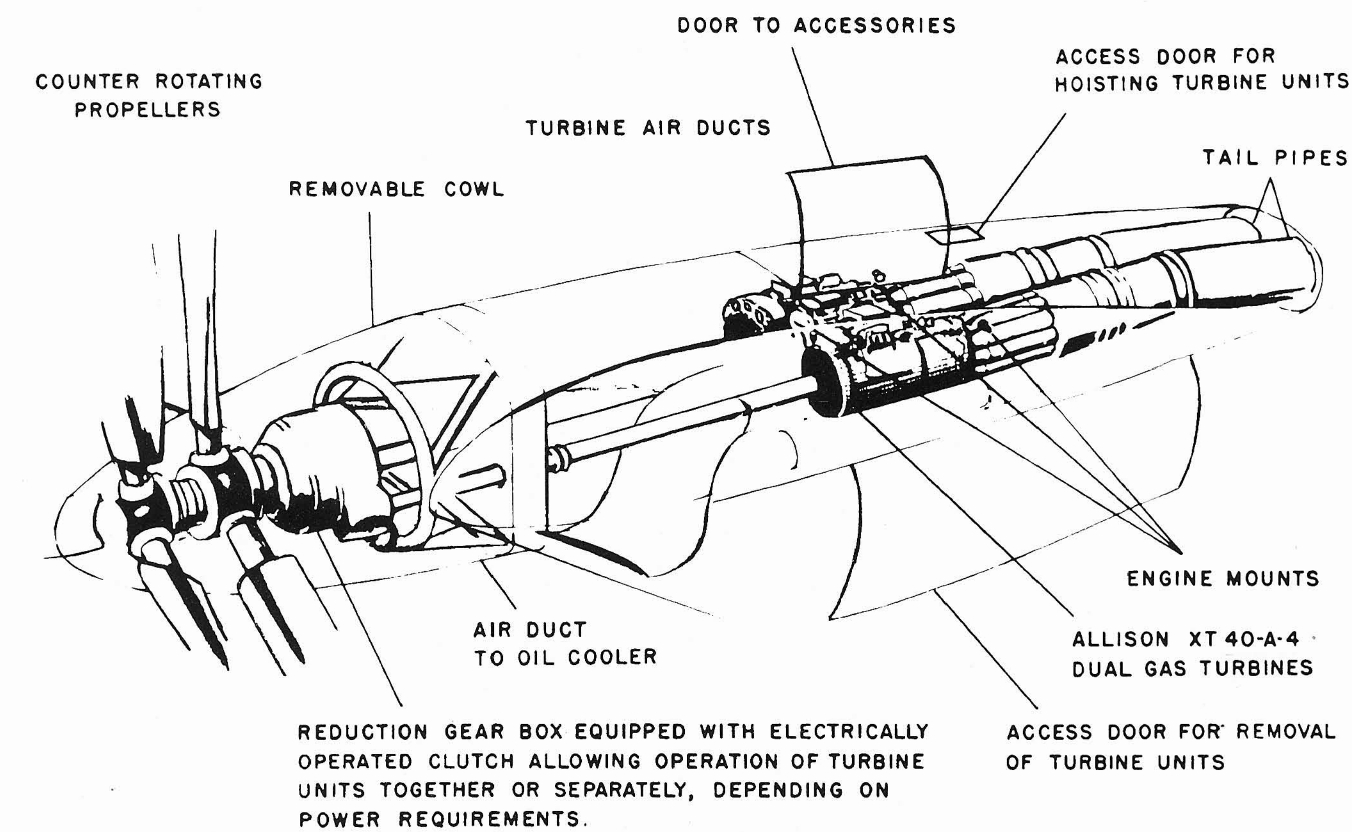
XP5Y-1 SPECIFICATIONS:		Tail span	55’ 4”	Aerodynamic washout	1°
		Height	44’ 10”	Sweepback	4°
Wing area	2,100 sq ft	Length	127’ 11”	Dihedral	1° 45’
Aileron area	163.4 sq ft	Beam	10’	Taper ratio (wing)	3
Stabilizer area	282.3 sq ft	Bow to first step centroid	58”	Stabilizer incidence	1°
Elevator area	227,2 sq ft	Bow to second step	100’	Stabilizer dihedral	10°
Fin area	188.1 sq ft	Floats: length	19’ 7”	Aspect ratio: wing	10
Rudder area	165.6 sq ft	beam	3’ 6.7”	horizontal tail	6
Dorsal fin	114.5 sq ft	height	4’ 5.4”	vertical tail	1.8
AIRFOIL SECTIONS		angle of heel	7°	High lift device: wing flap	NACA slotted
Wing: root	NACA 1420	Hull draft	5’ 7.9”	span	60%
splice	NACA 4417	Wing thickness (% chord):	188.5”	max flap angle	50°
tip	NACA 4412	at root section	20	Propeller clearance:	
Tail: horizontal	NACA 651-012	at splice section	17	at rest on the water	6’ 2.2”
vertical	NACA 651-012	at tip section	12	hull clearance	4’ 10”
DIMENSIONS		average	18	Propeller diameter	15’ 1”
Span	145’	Wing incidence: at root	5°		



POWERPLANTS: The Allison T40 turboprop engine is a coupled engine consisting of two identical axial flow gas turbine power sections. These power sections, through extensions shafting to a common reduction gear drive an AeroProducts dual rotation, six-bladed propeller. One single power section of the T40 represents a complete engine in itself. Designed by the Navy as the T38, it weighed 1,225 pounds and developed 2,750 equivalent shaft horsepower. A commercial version of this single-unit engine, model 501, was installed in the twin-engined Convair-Turboliner.

Each power section operated independently of the other. This feature permitted an aircraft to take off at full power with both power sections operating, but for maximum fuel economy, in cruising conditions, one

At left, XP5Y-1 on its dolly with the lower engine servicing door open. As seen in the drawing below, the open door provides access to the entire 7 foot long engine.



XP5Y NACELLE GENERAL ARRANGEMENT

power section could be cut out. The remaining power section, operating at its most efficient setting, continued to drive the six blades of the propeller.

One T40 weighed 2,500 pounds, including extension shafts and reduction gear. The power sections were 20 inches in diameter and seven feet in length, which consisted of a 17-stage compressor with 8 can-type combustion chambers and a 4 stage-turbine.

AERPRODUCTS PROPELLER: The General Motors AeroProducts propellers were full feathering, negative-thrust, contra-rotating propellers designed specifically for use with turboprop engines. Each unit consisted of two three-bladed propellers mated to a self-contained power pack which contained the oil supply, pumps, valves and governing system without dependence upon the engine or aircraft hydraulic system. AeroProducts developed an electronic control system for use on all turboprop installations which affordded:

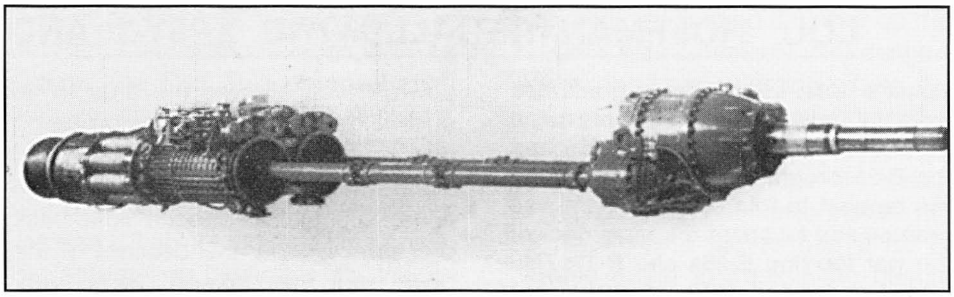
1.) The rapid response necessary for turboprop installations.

2.) Engine synchronization on multi-engine aircraft.

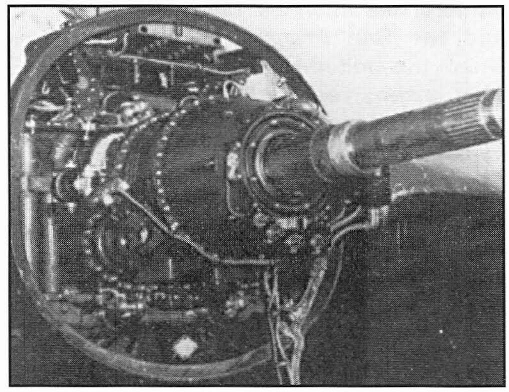
3.) Automatic cruise control, which operated on a pre-determined setting, resulting in optimum efficiency and range.

The 15-foot diameter propeller was designed to absorb from 5,000 to 6,000 horsepower, for use with turbine engines rotating up to 15,000 rpm and for aircraft speeds in excess of 400 mph.

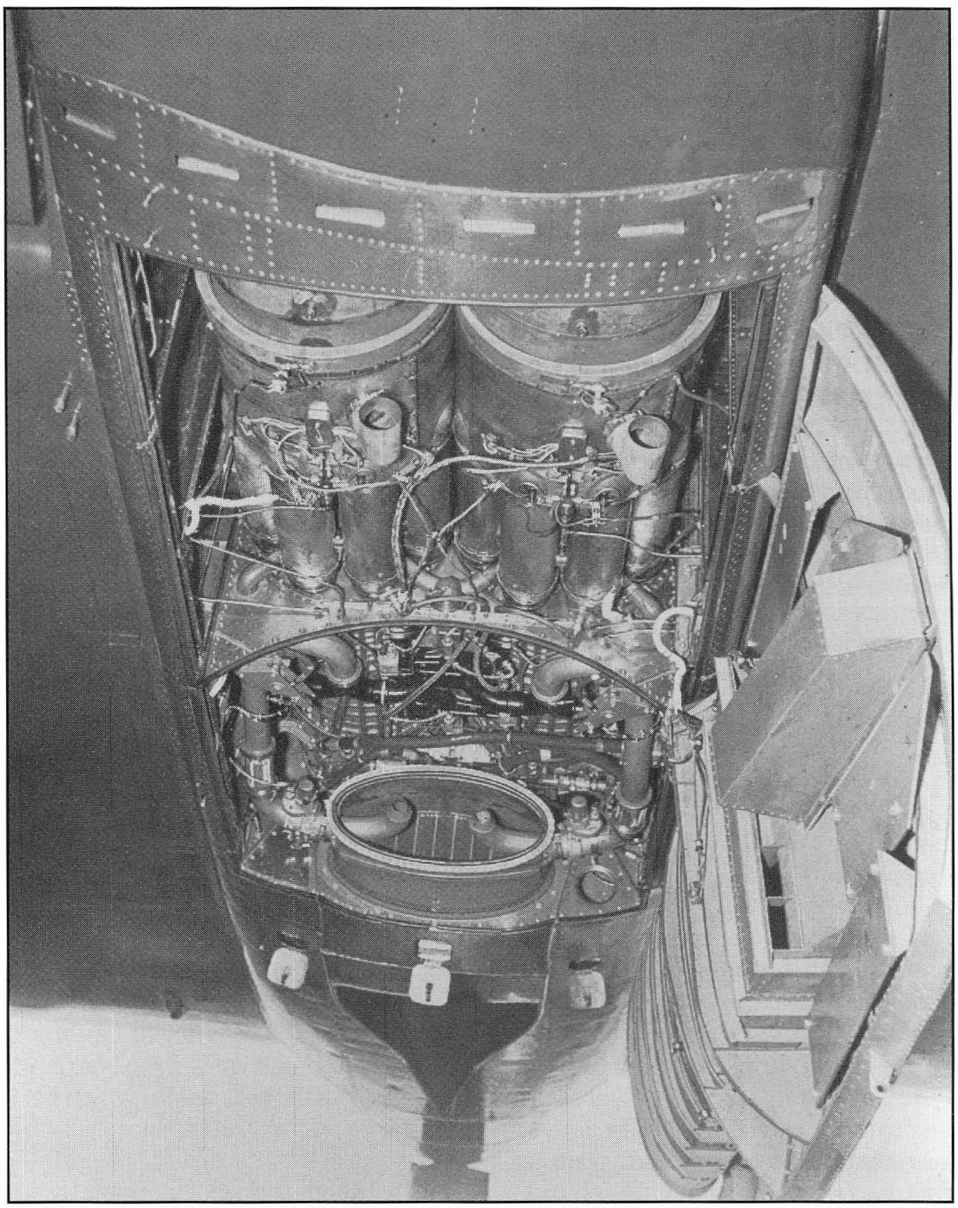
An electrical de-icing system was provided for effective ice removal from the propeller blades. This system used current supplied from the airplane electrical system, through slip rings at the propeller, to the heating elements mounted externally on the leading edges of the blades. A cycling unit mounted in the airplane provided the proper "on and "off" period for the current supplied to the heating elements.



Above, Allison XT40-A-4 coupled engine with the troublesome, long three-piece extension shafts that were shortened significantly on the R3Y series.



At right, close-up of the XT40's reduction gearbox.



At right, XP5Y-1 lower engine compartment looking forward towards the propeller. Note the combustion canisters ringing the two 20-inch coupled engines. (via SDAM)

LOU HOFFMAN RECALLS THE XP5Y-1 AND R3Y-1/2 PROGRAMS

Editor's note: Lou Hoffman graduated from the University of Minnesota as an Aeronautical Engineer and worked on the B-25 program at North American. His request to join the Air Corps was granted and he spent the remainder of the war ferrying B-25s and B-17s. He also transported VIPs to important conferences such as Yalta, Pottsdam and the San Francisco conference where the United Nations was formed. This extensive multi-engine experience would provide him the needed background for the XP5Y-1 and R3Y-1/2 program. On 10 April 1967, he was inducted in The Aviation Hall Of Fame.

After the war, I went to work at Douglas as a Flight Test Engineer. The job paid about $350.00 a month and I rode in the back of experimental aircraft such as the XBT2D-1N, until I found out that the pilots were getting $900.00 a month because their job was "Dangerous". So in 1950, I joined Convair as a Production Test Pilot and pretty soon they were phasing me into some of the experimental flight test programs.

XP5Y-1

I was asked to be co-pilot on the XP5Y-1 program with Don Germeraad. Since I had been an Army Air Corps pilot with a credible amount of time in four engine landplanes but none in seaplanes, the Navy and Convair agreed to have me checked out in PBMs. For several months, I operated PBMs out of North Island across the bay, making 154 water takeoffs and landings during which I believe I became quite proficient in seaplane operations.

At about 180,000 pounds, the XP5Y-1 was quite a bit heavier and larger than the PBM. Convair's Hydro Engineers had designed a hull with a 15-to-1 length-to-beam ratio, which was a big improvement over the previous 4-to-1 hulls then currently in use. Most seaplanes had a tendency to porpoise under certain conditions on the water, and my training in the PBM taught me I had to prevent it. In a downwind takeoff in a PBM, as you accelerated the bow would come up and then it would pitch over and drop down. If you allowed the drop to go unchecked, you could get porpoising or even a directional instability called a water loop. To prevent these conditions, you just needed a little back pressure to slow the descent of the bow and the takeoff went very smoothly from there on.

The XP5Y-1 had four XT40 Allison turboprop engines, with the power sections located behind the rear spar. Long extension shafts connected the power section to the propellers, which were located very close to the leading edge of the wing. This installation was very clean aerodynamically, but led to a tremendous amount of propeller noise in the airplane. The extension shafts turned at about 14,000 RPMs, and passed through several spars on the way to the power section. Because of this, the alignment was critical as the aircraft was built with a relatively flexible structure. Maintaining this alignment required a lot of work on the ground to keep the engines properly aligned and from coming apart.

Don was very good about giving me control time. On one flight in which I had control, we were doing a side load factor demonstration in which you keep the wings level with aileron and then apply greater and greater amounts of rudder until you are plastered against the side of the airplane, and the test instrumentation shows a force of 1/2G. However, the test instrumentation that measured this was allowed to corrode and we were getting no readings. So I kept increasing the rudder deflection and noticed that the force steadily increased (as it should), and then suddenly the force required was decreasing and rapidly approaching zero. I backed off and told Don, as I realized that to continue the deflection would result in rudder lock. Don then repeated the procedure with the same results. The fix layed us up for about six months while they designed and installed a new rudder which had different force characteristics.

On another occasion when I was in control, we were advancing the ai speed into unknown regions and w had completed one test point. As advanced the throttles to reach th next higher test airspeed, I felt vibration in the control yoke. As soo as I felt the vibration, I instantly pulle the throttle back as I had my hand o the throttle at the time. The vibratio instantly stopped. This same kind o flutter was what ultimately ended th XP5Y-1 program on 15 July 1953.

BUOY WORK

The XP5Y-1 was always afloat i a dock at the seaplane ramp when was ready for us to go flying. Whe we would return from a flight, w would tie up to a buoy and then th aircraft would be moved into the doc using boats. The thing that was a littl tricky about tying up to the buoy wa that you had to be close enough for crewmember reaching out of the fro door so he could put a line on th buoy, even though the pilots wer unable to see the buoy. The proce dure was further complicated by th fact that you had to have the pro pellers in reverse to offset the je exhaust, and be moving slowl towards the buoy. The propellers ble waves away from the airplane, givin the illusion you were backing up ver fast. It tricked your mind into thinkin that you were backing into the Coas Guard Station.

All told, I flew about twenty flight in the XP5Y-1. I was also gettin involved in Airliner and T-29 testing The Civil Aviation Authority designat ed me as a test pilot, which mean when the time came I could sign o the aircraft for the CAA as well as th company. So I was getting very bus when the R3Y program came alon and I enjoyed reduced participatio with it.

R3Y-1/2

The R3Y was quite similar to th XP5Y-1, at least as far as the hull wa concerned. The powerplant installa tion was quite different, even thoug the same XT-40 engines were used

On the R3Y, the engines were located on top of the wing with much, much shorter extension shafts. The whole thing was self-contained, therefore it was much more rigid and you didn't have the airplane flexing problem. The AeroProducts people said the propellers automatically adjusted the blade pitch of the front and aft propellers to insure that the air stream was not rotating. This feature turned out to be of interest when we got around to doing aerial refueling tests.

TANKER AIRCRAFT

The Navy was interested in using the R3Y as a tanker for fighter aircraft. They thought that they could refuel four fighters at the same time if they used the hose and reel system. I flew a T-33 to evaluate positions behind the R3Y to see what it was like, and where we would recommend those refueling pods be placed based on what turbulence I encountered. It turned out that the AeroProducts people were wrong in that the airflow was not straight behind their propellers. What we had was four different vortices in addition to the wing tip vortices. I went on to conduct quite a bit of the simulated refueling flights with Navy fighters. When the time came to hook up four fighters to the dry drogues, all at once we found that it was quite easy to do.

Because of the conflict with the Airliner and T-29 programs, I flew on-and-off on the R3Y-1 during most of its Part One demonstration at San Diego. The Part Two demonstration was to be done at NAS Patuxent River, MD, and Don and I flew the first aircraft back for this demonstration. It was quite a bit of fun, as I planned out the entire flight including all the possible emergency landing sites, including lakes and rivers. I had also calculated our alternate landing sites in case we encountered weather at Pax. If we remained at altitude and had to divert, we could make NAAS Jaxssonville, FL. If on low approach we had to divert, we could go only as far as NAS Quonset Point, R.I.

R3Y-2 BOWLOADER

I participated in the beaching demonstrations in the R3Y-2 bowloader. The idea being that the Navy could land at a lagoon or atoll and taxi up to the beach and unload men and material. To facilitate this, there was a stern anchor you deployed in an effort to keep the R3Y-2 tethered perpendicular to the beach, and which could hopefully be used to winch the R3Y-2 off the beach.

You would deploy the anchor, taxi up on the beach, lower the ramps and unload. One of the difficulties with this approach was that the airplane was essentially floating, and as weight was removed it rode higher in the water and the exhaust from the turboprop engines pushed it further up the beach. It was potentially very dangerous for the troops coming off, as the moving ramps could easily cut off a foot. Luckily, this type of accident never did occur. We never were able to get the stern anchor to pull us off, so we always had to use a lot of reverse thrust to get off the beach, and that blew sand in all directions pretty hard.

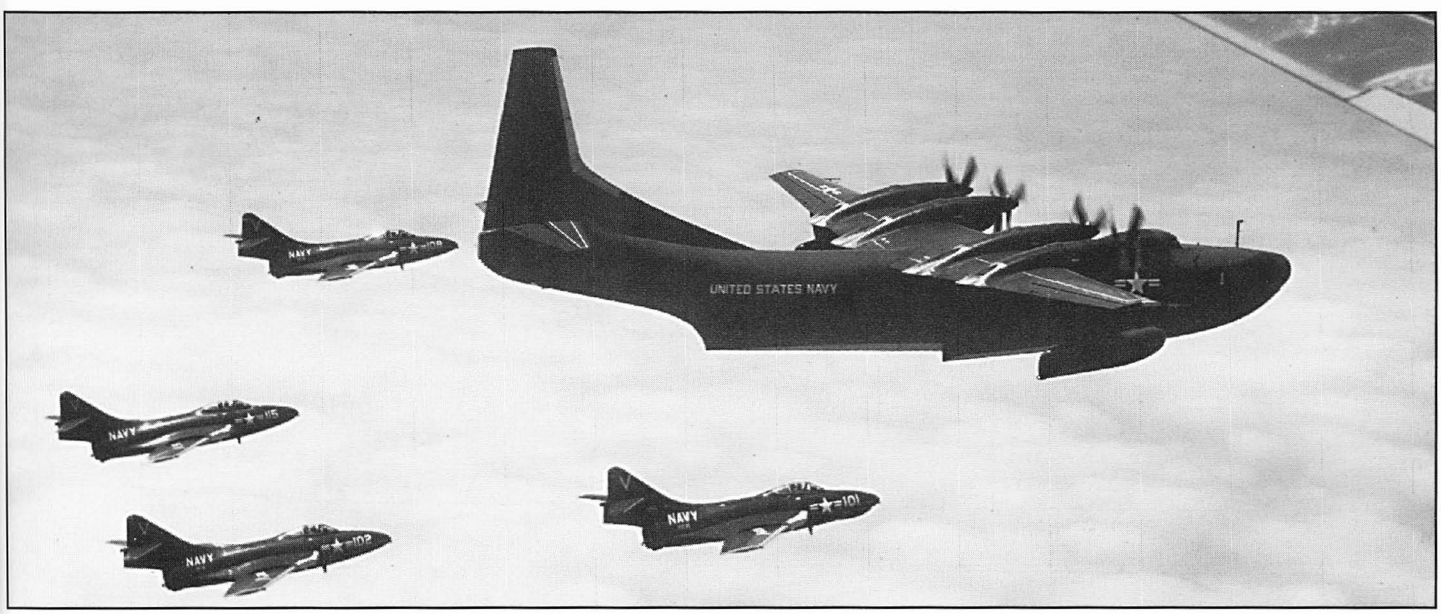
As I see it, the failure of the R3Y was three-fold.

One: the engine/gearbox combination were not ready for routine operations. I had always suspected that the difference in actual loads on the gearbox, from that which had been calculated using the AeroProducts information, quite possibly caused those gear boxes to fail, but that's pure speculation.

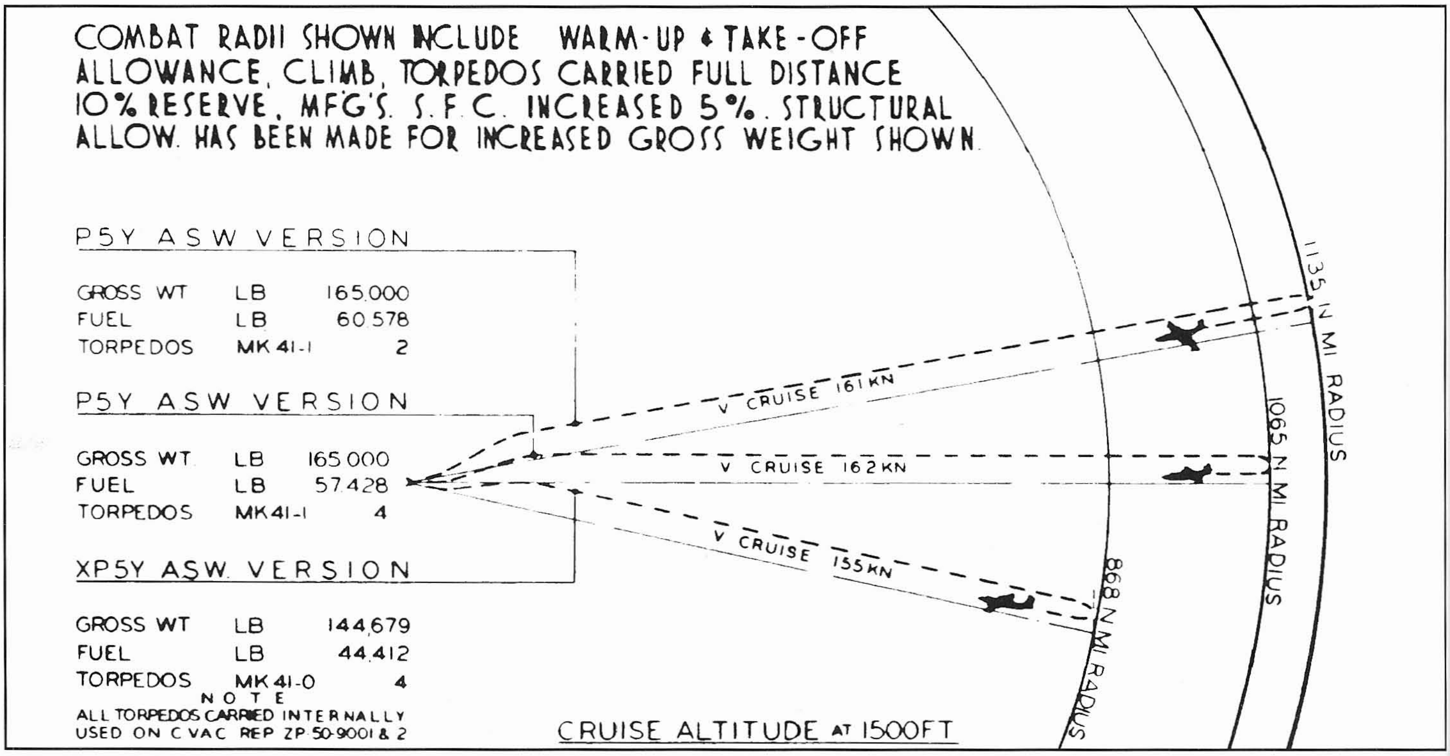
Two: the aluminum of the wings and fuselage was 75ST, which is very sensitive to corrosion. In fact, some of the R3Ys that had not been in the water were having delamination of aluminum plates.

Three: the Navy could get more cargo to Pearl in a C-118 than in an R3Y.

Below, four Cougars from VF-123 form up with an R3Y-1 for simulated refueling tests. These tests led to actual drogue hook-ups. (via Lou Hoffman)

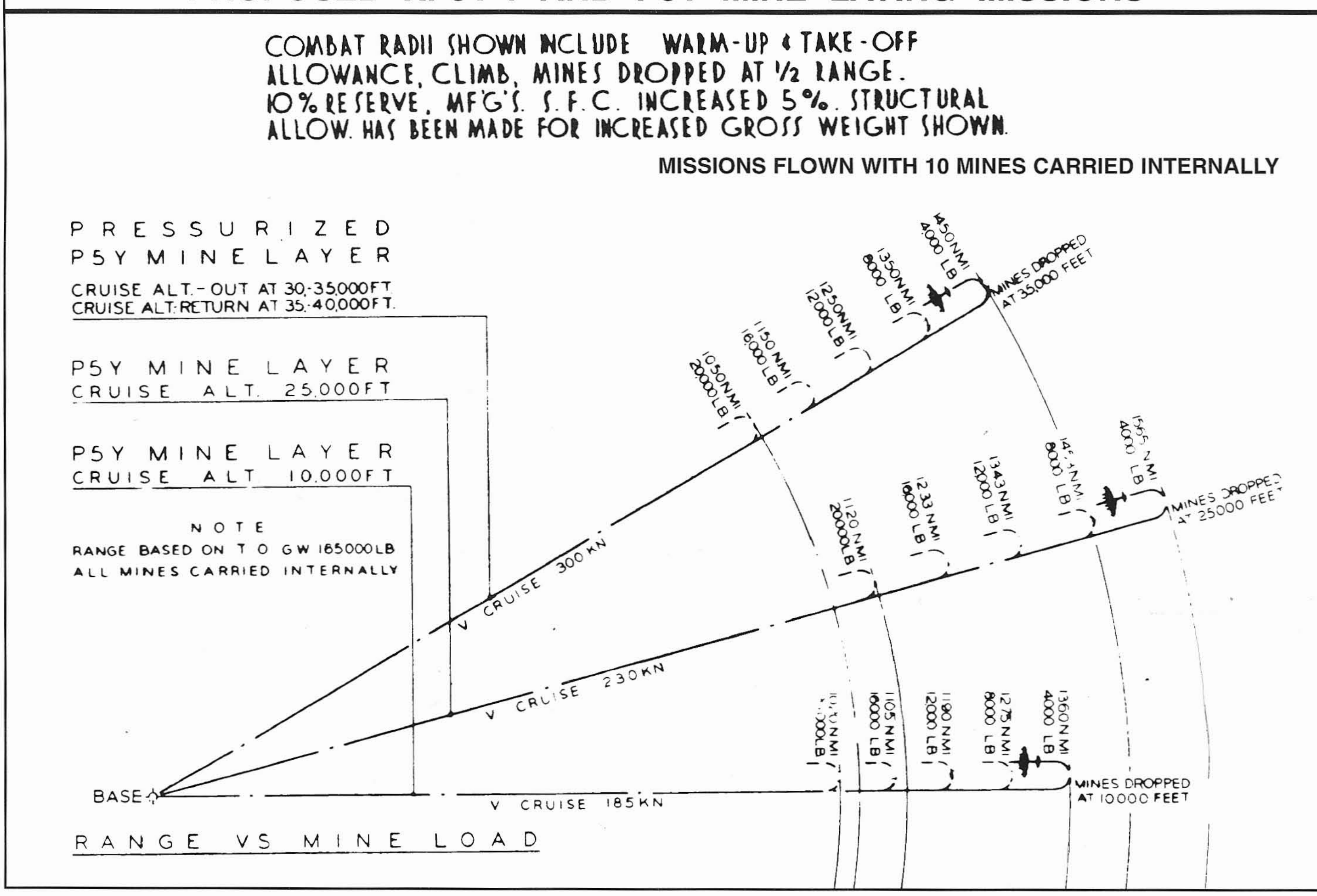


PROJECTED XP5Y-1 AND P5Y ASW MISSIONS



MISSIONS FLOWN WITH TWO OR FOUR MK-41-1 TORPEDOES

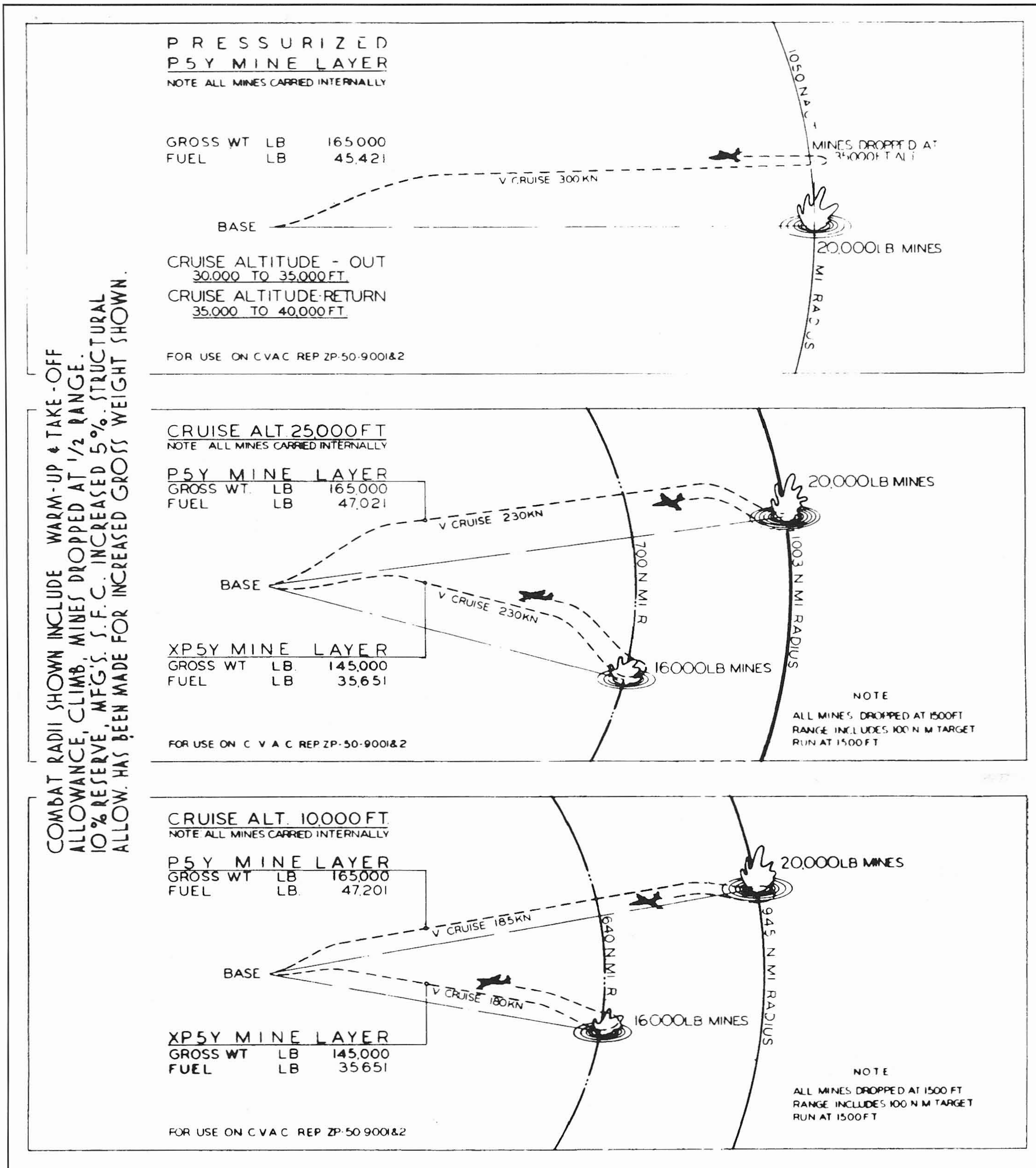
PROPOSED XP5Y-1 AND P5Y MINE LAYING MISSIONS



PROPOSED XP5Y-1 AND P5Y MINE LAYING MISSIONS

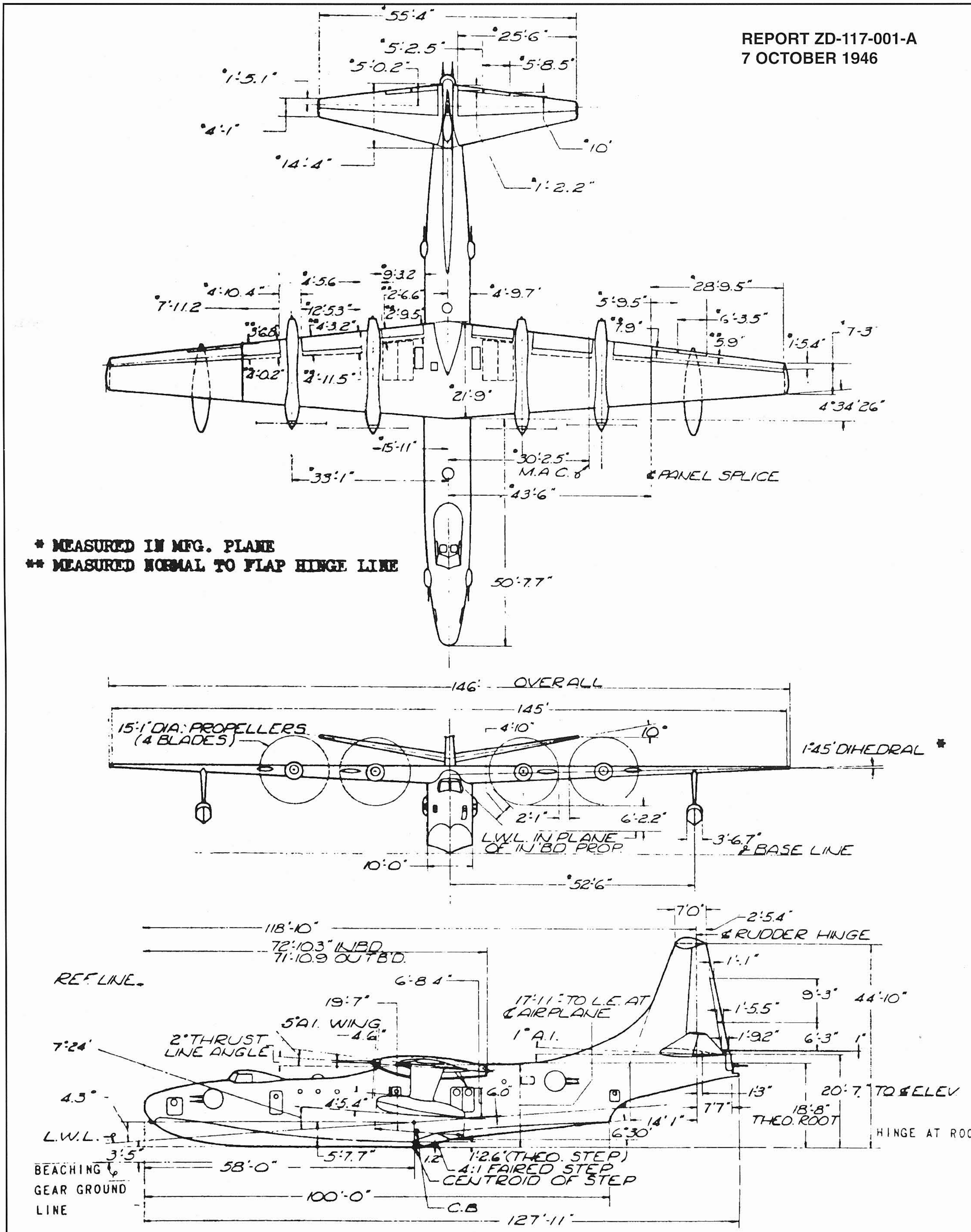
PROJECTED P5Y PERFORMANCE DATA WITH TEN 2,000 POUND MINES CARRIED INTERNALLY:

Maximum speed		Rate of climb at sea level	
at sea level	330 knots	all engines	2,650 ft/min
at 10,000 feet	340 knots	one engine inoperative	1,675 ft/min
at 25,000 feet	343 knots	Service ceiling	34,000 feet



XP5Y-1 THREE-VIEW

REPORT ZD-117-001-A
7 OCTOBER 1946



THE CONVAIR R3Y-1 AND R3Y-2 TRADEWIND

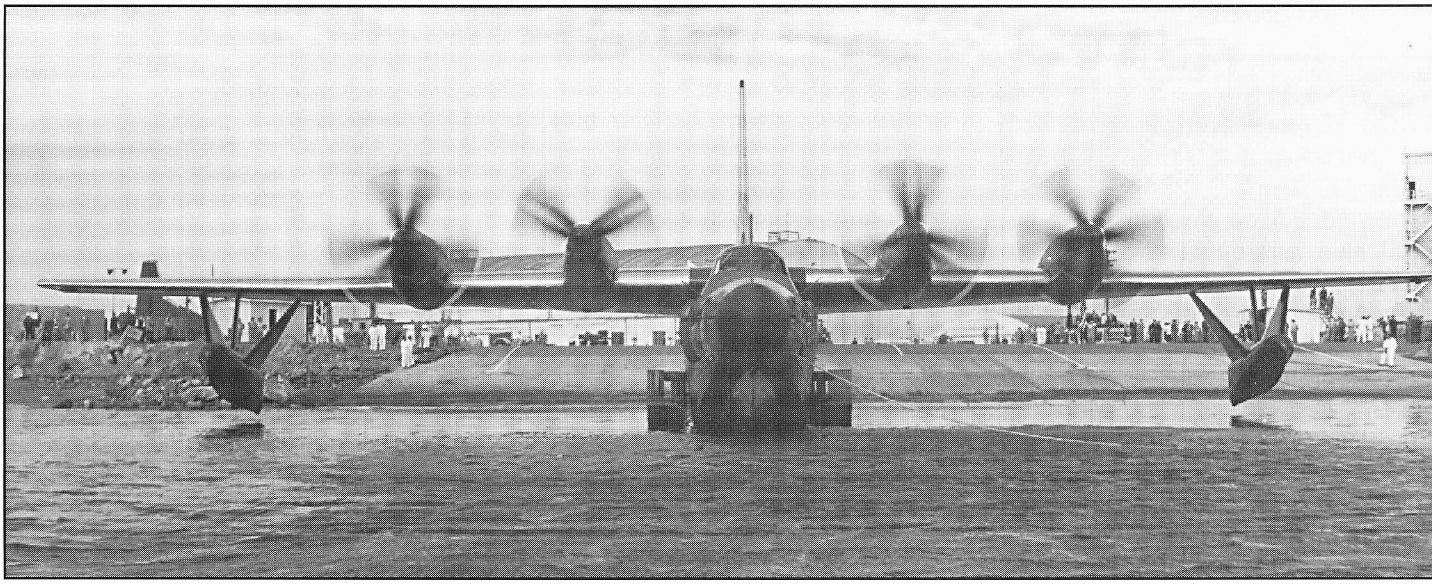
On 16 August 1950, a contract was placed for six R3Y-1 (Convair model 3, BuNo 128445-128450) Tradewinds.. A contract for an additional five aircraft (BuNo 131720-131724) was placed on 10 February 1951. An improved wing and nacelle design accommodated the uprated short-shaft 5,332 SHP T40-A-10 engines. Ordered as a transport, the R3Y differed substantially from its XP5Y-1 predecessor. In addition to the improvements made to the wing and engines, a new vertical tail was installed with zero degree horizontal stabilizers and a 14'7" longer hull. A stronger float support structure and increased fuel capacity were added.

Internally, the hull structure differed from all previous large flying boats like the Coronado and Mars by having no internal bulkheads installed above the cargo deck. This allowed unrestricted movement and storage of cargo. To facilitate loading, a ten-foot-wide cargo hatch was installed in the port side aft of the wing. The aircraft was soundproofed, air-conditioned and pressurized to 7.5 psi. As a troop transport, 80 personnel were accommodated in aft-facing seats; as an air ambulance, 72 litter patients and eight attendants could be carried. Passengers were serviced by two restrooms (heads) in the aft of the aircraft. Maximum payload in the cargo mode was 48,000 pounds.

The first R3Y-1 (BuNo 128445) was given a ship's christening with the traditional waters of the seven seas on 17 December 1953. More than a dozen of the world's leading airlines, all operators of Convair 240-340 Convair-liner passenger plane, cooperated in gathering and shipping water samples from the following waterways: Arabian Sea, North and South Atlantic, Baltic Sea, Black Sea, Caribbean Sea, China Sea, Coral Sea, Indian Ocean, Mediterranean Sea, North and South Pacific Ocean, Pearl Harbor, San Francisco Bay and the Tasman Sea. The water was delivered by United Air Lines, Aerolineas Argentina, Pan American World Airways, KLM Royal Dutch Airlines, Hawaiian Airlines, Philippine Airlines, and Trans-Australian Airlines.

The water was ceremoniously mixed in a large urn and the mixture

Above, Esther Williams christens the R3Y-1 Tradewind with the traditional waters of the seven seas in preparation for its launching on 17 December 1953. Below, Esther Williams, famed film and aquatic star, delivering the christening speech on the 50th anniversary of the Wrights' triumph at Kill Devil Hill with flight crew, Convair dignitaries and frogmen looking on. (via Lou Hoffman)



poured into a champagne bottle for the christening. Esther Williams, famed Hollywood film and aquatic star, did the honors while the Convair engineering test crew consisting of Don Germeraad, William J. Martin, Lou V. Hoffman, R. G. McGeary, W. J. Belliston, B. B. Gray, J. H. Mason, E. H. Davies, F. L. Cook, R. W. Bonney, L. R. McClain, R. J. Blake and R. E. Sassaman watched on. Shortly after the christening, the first Tradewind was launched that same day on 17 December 1953 as part of San Diego's observance of the Golden Anniversary of Powered Flight.

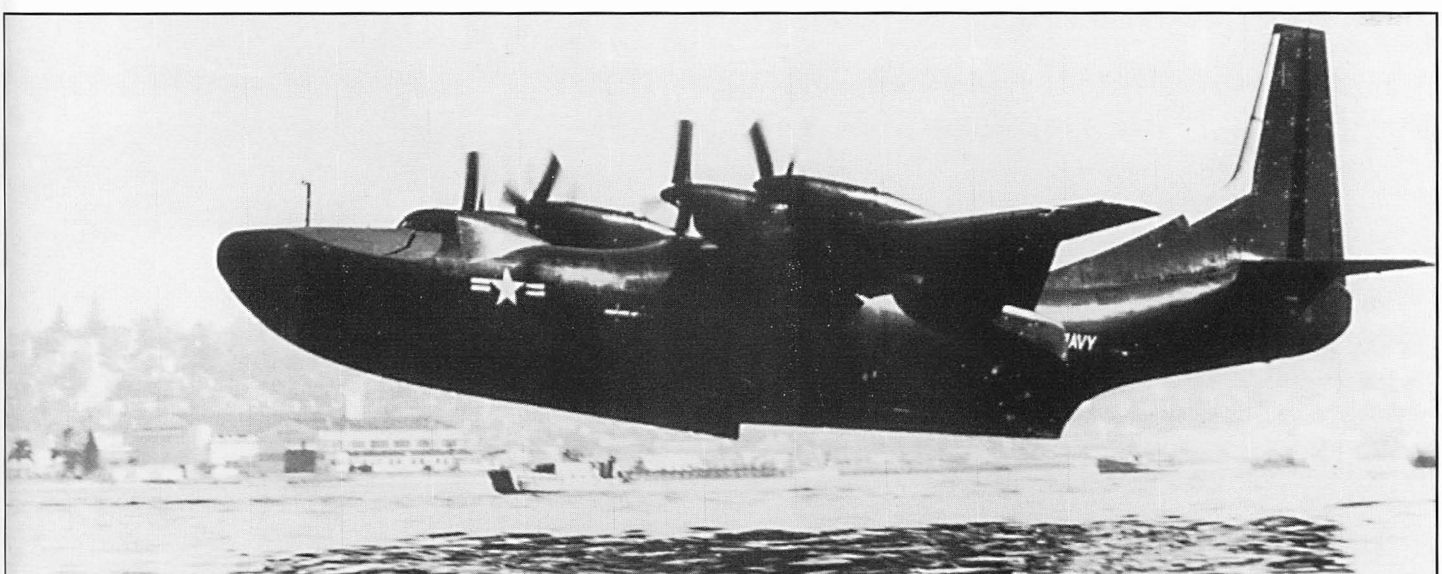
The first flight occurred on 25 February 1954 and lasted two hours. A three-hour flight had been planned but the test flight was cut short when the number two engine had to be feathered because of a minor malfunction. The pilot, Don Germeraad, was quoted as saying, "the handling characteristics of the plane were beautiful. I have piloted several types of flying boats but the R3Y is by far the best I've ever handled."

The R3Y-1 completed its Part 1 structural demonstrations in December 1954 at San Diego, with the Part 2 demonstrations being conducted at Nas Patuxent River, MD. A portion of the Part 1 testing was conducting rough water landing and take offs. Most of these tests were conducted in the San Diego area, but on 18 February 1955, a crew of seven headed by Don Germeraad flew to San Francisco Bay and made a dozen rough water takeoffs and landings.

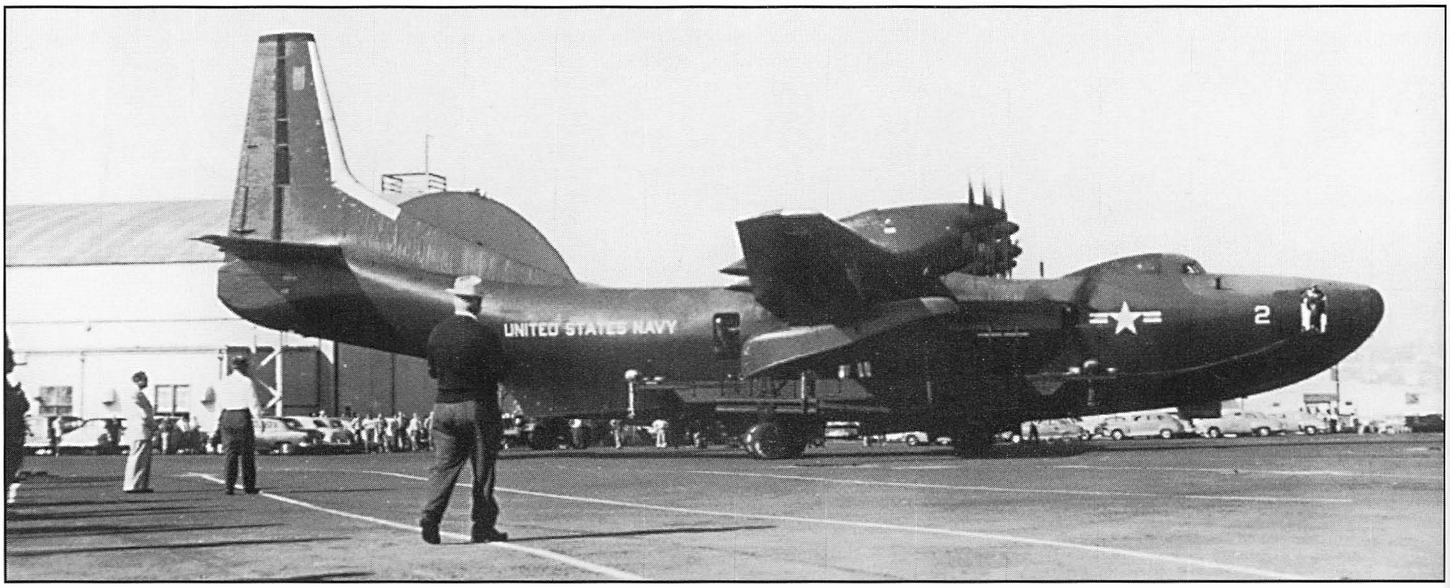
By this time, Convair Test Pilots had flown over 250 flight hours in the R3Y-1s, conducting performance tests, rough water landings, night operations, troop and equipment landing operations, and flights to and from NAS Alameda in San Francisco Bay.

Above and below, the first R3Y-1 taxis under its own power down the seaplane ramp and into the water for its first flight. The flight lasted for two hours before a minor engine malfunction stopped it. Note that the engines are mounted on top of the wings, instead of being buried in the wing as on the XP5Y-1. (via Richard Koehnen)

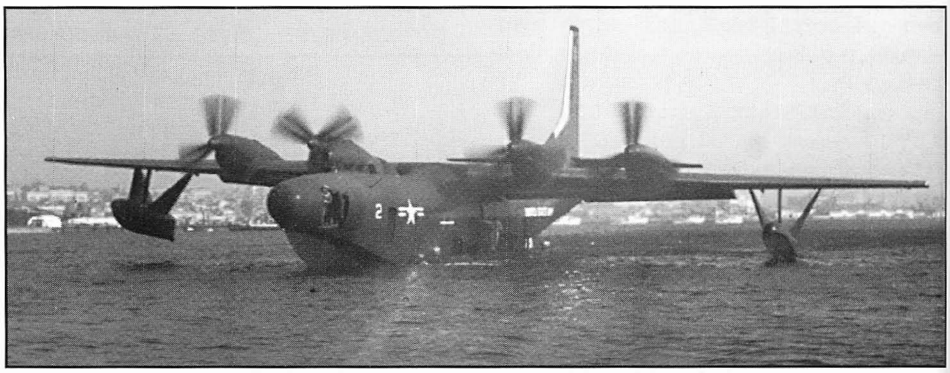
R3Y-1 128445 makes its take-off run on its maiden flight on 25 February 1954. Compared to the XP5Y-1, the R3Y-1 was sleeker. The revised vertical tail, flat horizontal stabilizer, and new nacelles enclosing the forward mounted, short-shafted T40-A-10 engines make for a much more graceful flying boat than the XP5Y-1. (via Combat Models)



4 NOVEMBER 1954 R3Y-1 MEDIA DEMONSTRATION



The number two R3Y-1, 128446, was used during a media demonstration held by Convair on 4 November 1954. The first aircraft to fly was the XFY-1 Pogo flown by "Skeets" Coleman (see Naval Fighters #27). The R3Y-1 was next and is seen above taxiing to the ramp. At right, it's seen returning and below it forms the backdrop for the third demonstration aircraft, the ill-fated YF2Y-1 SeaDart (see Naval Fighters #23), which disintegrated during its media demonstration.



JOHNY KNEBAL REMEMBERS THE R3Y TRADEWIND

Editor's note: LTCOL John Knebal, a graduate of the Navy Test Pilot School and member of the Society of Experimental Test Pilots, is a retired Air Force Command Pilot, test pilot and airline captain. His road to Convair started in the Ferry Command during WW II, where he flew every aircraft he could get his hands on. This was followed by flying C-47s in North Africa, and finishing the war in the first jet fighter squadron flying P-80s under the command of COL Bong at Muroc, CA. After the war, he flew DC-3s commercially, and even flew DC-3s loaded with nitro into the jungles of South America for use in mining operations. He flew for non-scheduled airlines, then Turner Airlines, and finally ran the proving runs for Oliver Parks when he began Parks Airlines. He flew for them until Ozark took over.

After Ozark bought Parks Airlines in 1950, I took a six-month leave-of-absence over a seniority dispute. When I was in California, I wanted to visit Convair and get a look at the B-36 production line. So I stopped by and filled out an application so I could get the nickel tour, and before I could leave was called into Sam Shannon's office. Sam needed a pilot to ferry B-36 main gear units back and forth from Ohio in a DC-3. When he saw my application and my extensive C-47/DC-3 experience, he offered me the job. I accepted and began my 15-year career at Convair as a test pilot.

After flying the DC-3s, I tried to check out on everything in the Convair stable, including the B-36. Because of my P-80 experience, I was loaned to the engineering department to fly an F-94C Convair had on a bailment contract from the Air Force. I was promoted to engineering test pilot in 1954, and soon became alternate pilot to "Skeets" Coleman on the Pogo. This lead me to the R3Y program, which was utilizing the same engine.

Bill Carrier, a production pilot, was FAA qualified to give type ratings. I took the left seat in an R3Y during a test hop Bill was flying so that I could get a multi-engine water type rating from him. I knew that this would be a particularly difficult flight, as Bill was one of those guys who doesn't think anyone can fly as well as he could. Luckily, it was just one of those days when everything I touched was perfect.

One of the things I had to do that day was to make a buoy rendezvous. The R3Y was the easiest handling boat ever made while on the water. This was mainly do to the fact that you had zero thrust available from the Allison Turboprop engines. You could just about make the R3Y do anything you wanted, including pirouettes. This could be done because of the smooth airflow the contra-rotating propellers provided through zero to reverse, back to positive, enabled you to use asymmetric thrusting techniques to accurately maneuver the aircraft. Jet boats like Martin's Seamaster would never be capable of such precise handling, even if thrust reversers had been installed.

After making the buoy, I came sliding on into the floating dock, making a perfect docking approach, and shut her down. The flight engineer came up and said, "Gosh Darn Johnny, I didn't know you could fly a boat that well" (because he knew I was ex-Air Force), and before I could answer, Bill said, "He can't, he's just been lucky all day." He then gave me the type rating.

Don Germeraad and I were delivering the first R3Y-1 to the Navy (aircraft #4) at NAS Patuxent River, Md, for BIS trials, and we wanted to see how fast we would cross the US. So we waited for a couple of days until the jet stream had swung south. When conditions were right, we took off from San Diego and ran non-stop to Pax River, setting a Transcontinental speed record for flying boats of six hours, at an average speed of 403 mph.

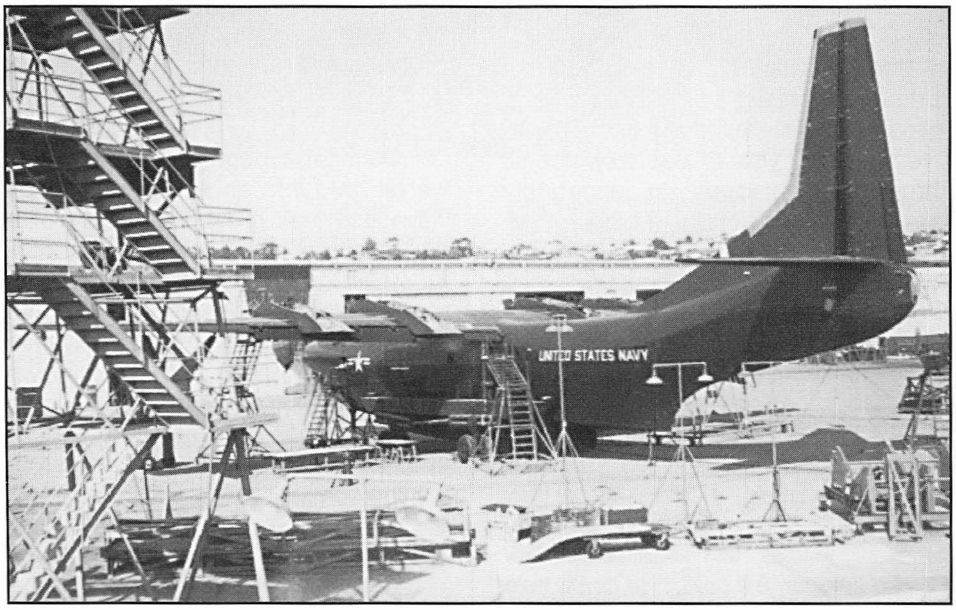
Navy contract requirements called for six high-sink-rate landings, which were conducted in the harbor. Even the most experienced test pilot in the world would have trouble in not giving the wheel a little bit of a touch of back pressure to ease the high sink rate just prior to water contact. If you did this (and we did), you often ended up bouncing the aircraft out of the water a half of a wingspan up and found yourself fresh out of airspeed. With the big floats on the end of the wings, you would feel a slow snap of the wings as they flexed up and down. Each time this happened, as we were sitting up there just above stall speed, the beautiful response of the T-40s and their contra-rotating propellers would save us. Since the Allison was a constant speed engine, we were able to slam the power all the way to the firewall and the propellers would take a big bite out of the air and you would get instant reattachment along the wing, and the aircraft would start flying again. We finally got our required six landings in after quite a few attempts, and then it was on to rough sea landings.

During the rough sea landing tests, we hit hard into an exceptionally high wave and took green water right over the horizontal tail, crushing the horizontal stabilizer leading edge back to the forward spar and partially jamming the elevators, making the aircraft unflyable. About half the crew got sick, and we lost two of the engines for awhile during the hour it took to taxi back to port. In each of our rough sea, high sink rate landings, we popped rivets. This was not unusual in a flying boat, even in a well built boat like the R3Y Tradewind.

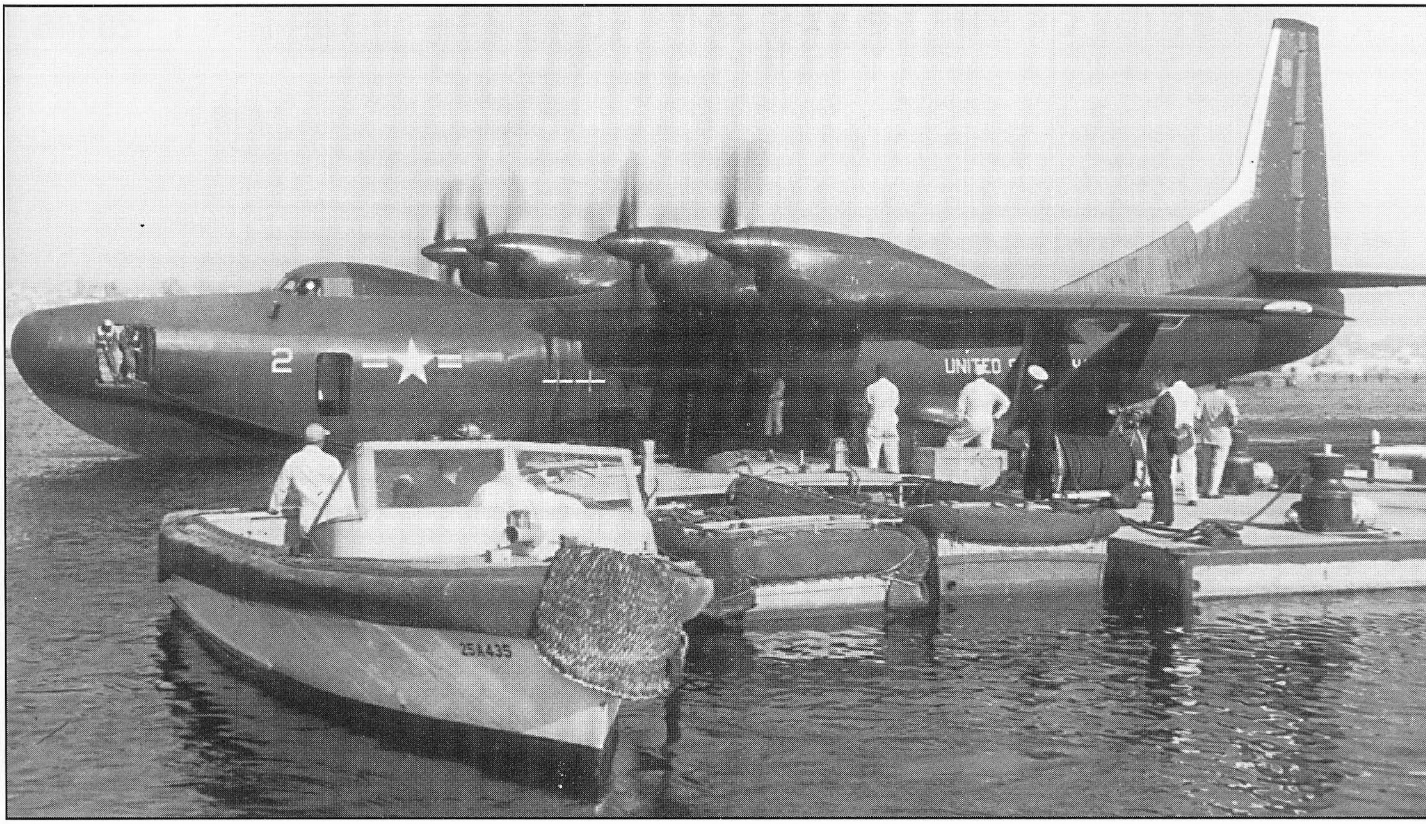
Don Germeraad had an interesting trip out over the desert. The weather had closed in on him and he couldn't get back to San Diego. He was forced to put her down in the Salton Sea. During the stormy night, they began to lose their mooring line and they had to fire up two engines to hold the aircraft steady until morning.

We were not able to meet the prescribed specifications on range and speed in the Tradewind. Initially, Allison missed their specific fuel consumption numbers quite badly on the XT-40s. Allison was able to make some improvements, but were never able to deliver the contracted numbers. Because of this, we couldn't give the Navy the range it needed for these boats to be successful. We tried upping the gross weight by 10,000 pounds so we could add more fuel in an attempt to make our contracted range.

All-in-all an interesting and unique program.



Above, Convair flightline line and final assembly area for the Tradewinds. #2 R3Y-1, 128446, is in the foreground followed by #1, 128445, #6 R3Y-2, 128450, #5 R3Y-1, 128449, and #3 R3Y-1, 128447. (SDAM) At left, R3Y-1, 128446, under construction at Convair San Diego. (SDAM) Below, R3Y-1, 128446, launches from the Convair seaplane ramp. (SDAM) At right top, the #2 R3Y-1 continues into the Bay while Convair employees watch from three Convair boats and the adjacent dock. (SDAM) At right bottom, R3Y-1 #5, 128449, in flight over the Pacific. This aircraft is erroneously listed in NewsPaper articles of the day as being the R3Y-1 that set a cross-country speed record on 2-24-55, because of a 2-22-55 press release naming it as the ship that would be used. (SDAM)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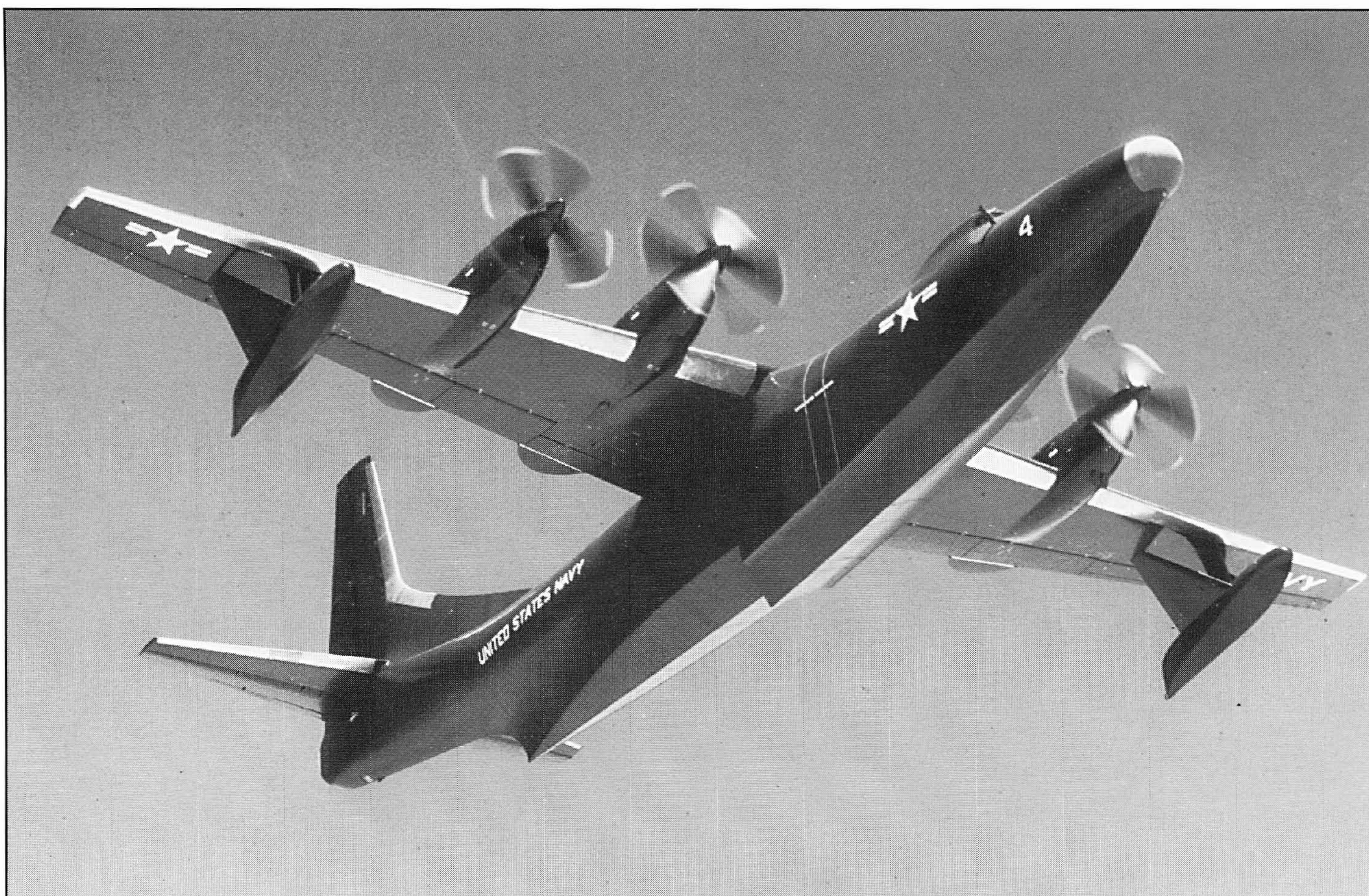
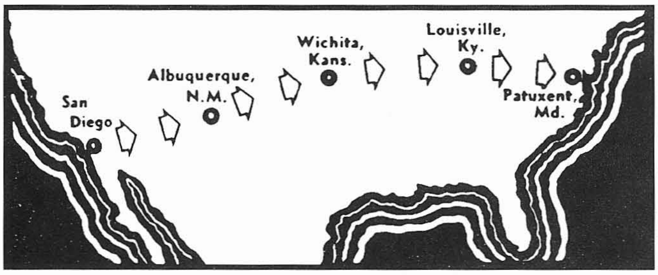
UNITED STATES NAVY

INFLIGHT STUDY OF THE RECORD-SETTING NUMBER FOUR R3Y-1 128448



The Tradewinds were unusually marked in that they had UNITED STATES NAVY instead of NAVY painted on the fuselage side. All the Tradewinds carried a nose number which corresponded to their construction sequence. This R3Y-1 had an off-white radar nose. Notice the wide natural metal leading edges on all the flight surfaces, leading edges and engine exhaust areas. The wing and horizontal wing-walk areas are outlined in white. Because of the counter-rotating propellers, there are two, red engine warning stripes on the fuselage. Also note the large flat black anti-glare panel in front of the canopy.

FIRST USN DELIVERY AND TRANSCONTINENTAL RECORD-BREAKING FLIGHT



Below, R3Y-1, 128448, passes low over Navy ships in San Diego Bay just prior to its record-breaking delivery flight to the Navy at NAS Patuxent River, MD. (SDAM) At right top, the first R3Y-1 delivered to the Navy was ship number four, 128448, which was delivered on 24 February 1955. Seen here in NATC markings, with ST for System Test, on 25 May 1955, as it starts up the VW-2 seaplane ramp at NAS Patuxent River, MD. (USN) At right middle and bottom, R3Y-1, 128445, taxiing into the VW-2 beaching area at Pax River on 15 June 1956; note large anti-glare panel. (USN)

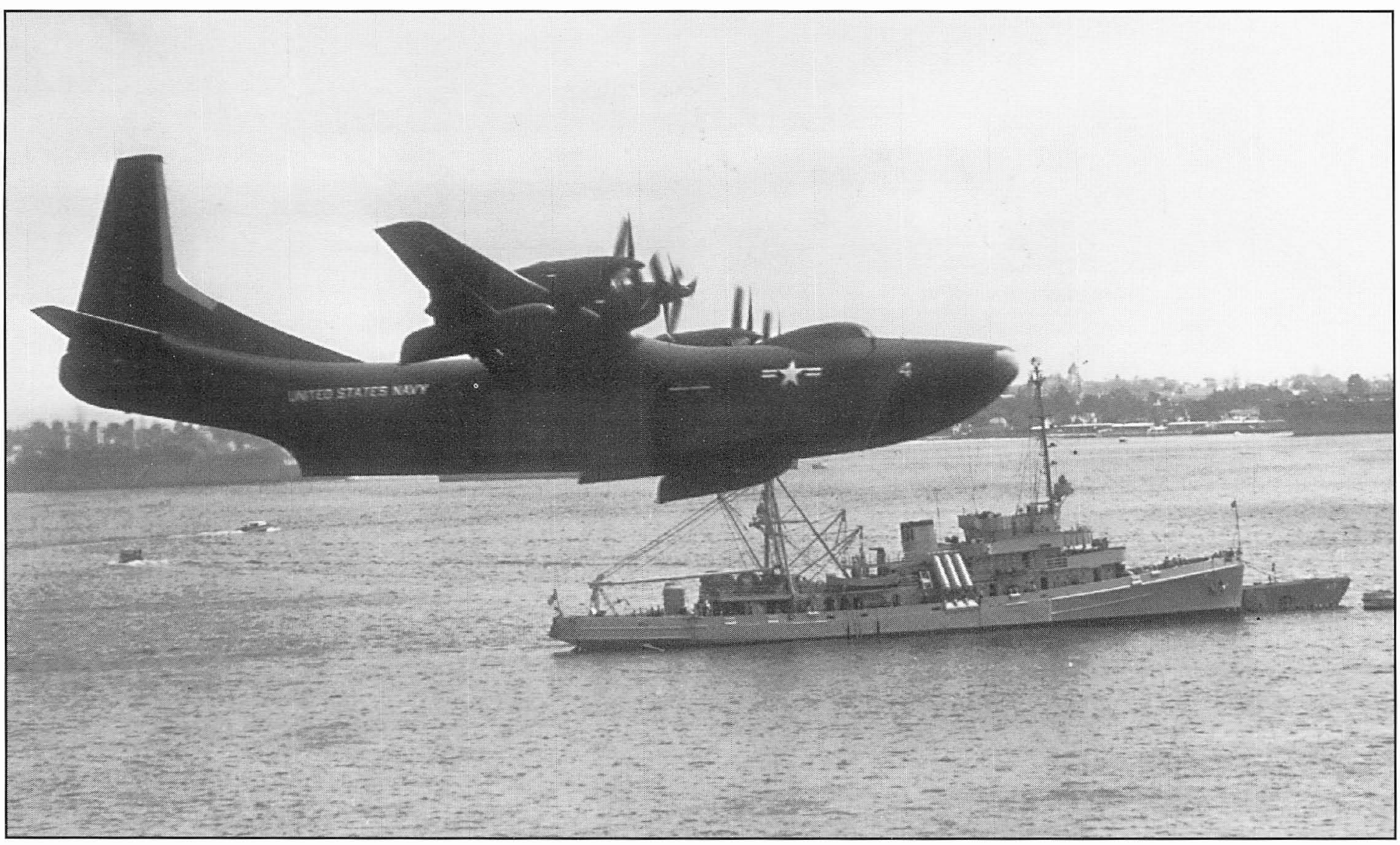
On 24 February 1955 at 4:34 AM California time, the number 4 R3Y-1, 128448, took off from San Diego Bay on a nonstop delivery flight to NAS Patuxent River, MD. From the start, the first Navy delivery was planned as a record-breaking transcontinental flight by Convair. Convair's Chief Test Pilot Don Germeraad completed the 2,400 mile flight in six hours, landing at Pax River at 1:34 Eastern time with an average speed of 403 mph. His crew consisted of co-pilot Johnny Knebel, Navy co-pilot and Convair BAR representative LCDR W. C. Bergstedt, senior flight engineer J. H. Mason, and flight engineers W. C. Robinson and R. M. Bloom. The aircraft was not stripped for the record breaking flight, but carried a light load of flight test instruments and spare parts for the R3Y-1. The route was flown at 27,000 feet from San Diego to Albuquerque, to Wichita, to Louisville and on to NAS Patuxent River, MD.

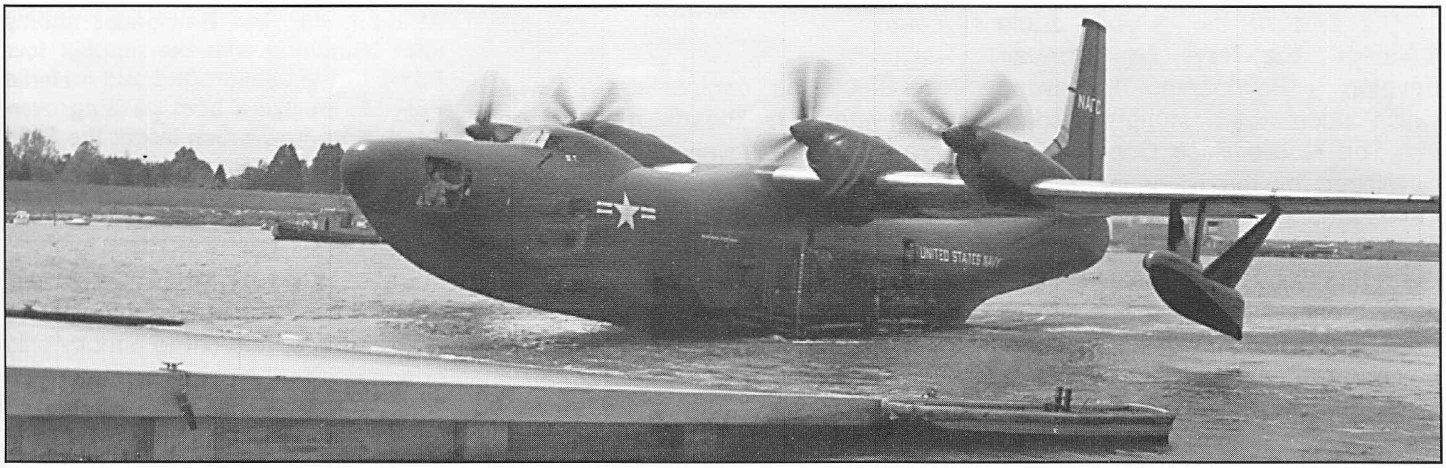
Aircraft #4 remained at Pax River for six months, where it conducted thirty test flights from New England to the Bahamas. The longest flight flown, on September 7th, was nine hours and six minutes. In August, the first parachute drops from an R3Y were made by paratroopers from Fort Bragg.

128448 was returned to Convair's San Diego plant on 21 September 1955 by an all-Navy crew consisting of CDR Vincent Deitchman, pilot; LCDR E. R. Horrell and LCDR D. G. Sliger, co-pilots; ADC J. W. Phagan, chief flight engineer; AD2 E. J. McCracken, flight engineer; AD1 T. Hagwood, third engineer; AL2 W. C. Allen, radioman; and AE2 R. Griffth, scanner. After arrival, the aircraft was inspected and refurbished prior to reassignment to Navy units.

The second Tradewind at Pax was Bowloader R3Y-2, 131720, which was tested from 22 September 1955 through 21 March 1956.

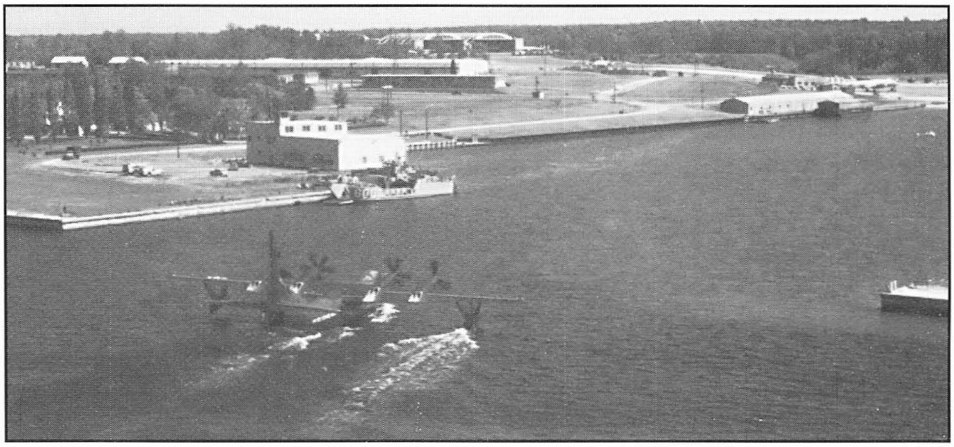
The third Tradewind to arrive at Pax River for testing was the first aircraft built, R3Y-1, 128445. On 11 September 1955, Don Germeraad

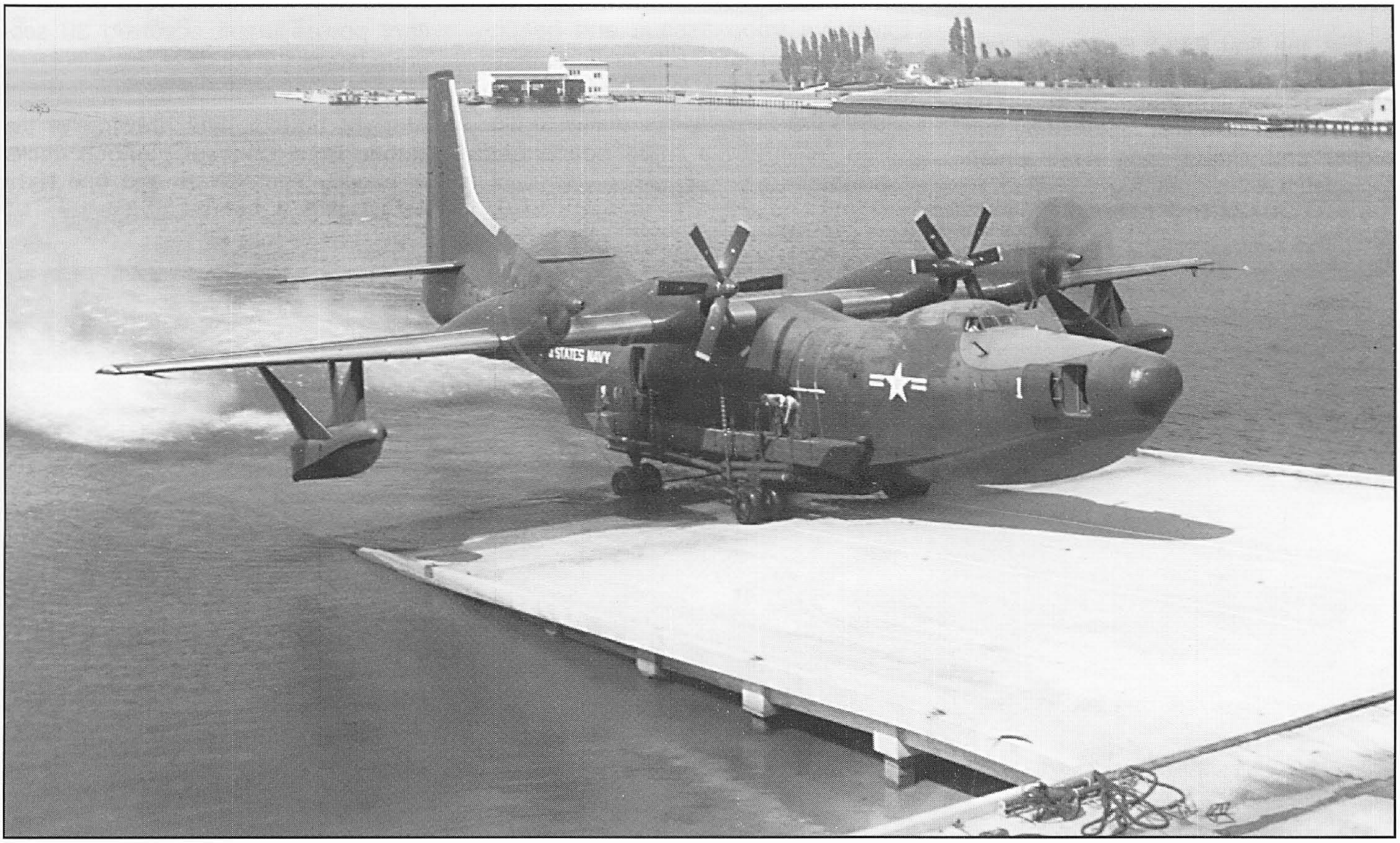




with Lou Hoffman, co-pilot, R. M. Bloom and R. C. Schaefer, flight engineers, and R. W. Bonney and R. L. McClain, flight test engineers, completed the flight in seven hours and twenty-five minutes, landing at 3:31 pm (EST). 128445 was returned to San Diego on 21 March 1956.

The forth Tradewind to arrive at NATC was R3Y-2, 131721 arriving on 1 August 1956 and spending only two months on the East Coast before returning to California.





"FLYING LST", THE R3Y-2 BOWLOADER

As part of the "Mobile Base Concept", the Navy had Convair develop a Bowloading Tradewind which incorporated straight-in loading. The Mobile Base Concept was developed by the Navy in the late 1940s around a high speed seaplane transport (the R3Y), a jet fighter seaplane (the Convair F2Y SeaDart), and a jet bomber seaplane (the Martin P6M SeaMaster). It was planned that these three aircraft could fly anywhere in the world and have a floating base set up by suitable naval vessels anchored or buoyed in sheltered water. The concept was further enhanced by design studies for a floating pontoon dock (see following page), made from aluminum pontoons which housed machinery, fuel, ammo and supply compartments. These self-contained repair and supply pontoons could be towed by tug or other small naval vessels to new Mobile Base locations, or be delivered as deck loads aboard Navy AKAs. It was further envisioned that the Bowloader R3Y-2s would be able to pull up and tie up to these floating docks to off-load and on-load their cargo.

Since the original design was built without bulkheads in the cargo area, it was relatively easy to modify the fuselage/hull by enlarging and raising the bridge so that the entire crew could be housed topside. This change increased the personnel load from 80 to 103 in the troop transport mode, and as an air ambulance, the litters were increased from 72 with 8 attendants to 92 with 12 attendants. The R3Y-2's extruded magnesium main deck had a capacity for 24 tons of cargo. The loading deck area was 88 feet long and averaged over 9 feet wide. The bow door opening was 8 feet 4 inches wide and 6 feet 8 inches high.

The R3Y-2s, ships 6-11, were covered under contract NOa(s) 52-143i issued in February 1953. These five aircraft carried BuNos 131720 through 131724, which were not consecutive with the six R3Y-1s.

The first R3Y-2 flight took place on 22 October 1954, and lasted one hour and twenty-three minutes. Extensive troop assault and beachhead equipment off-loading tests were conducted in San Diego Bay to assess the Bowloaders' ability to disgorge troops in a rapid beachhead assault.

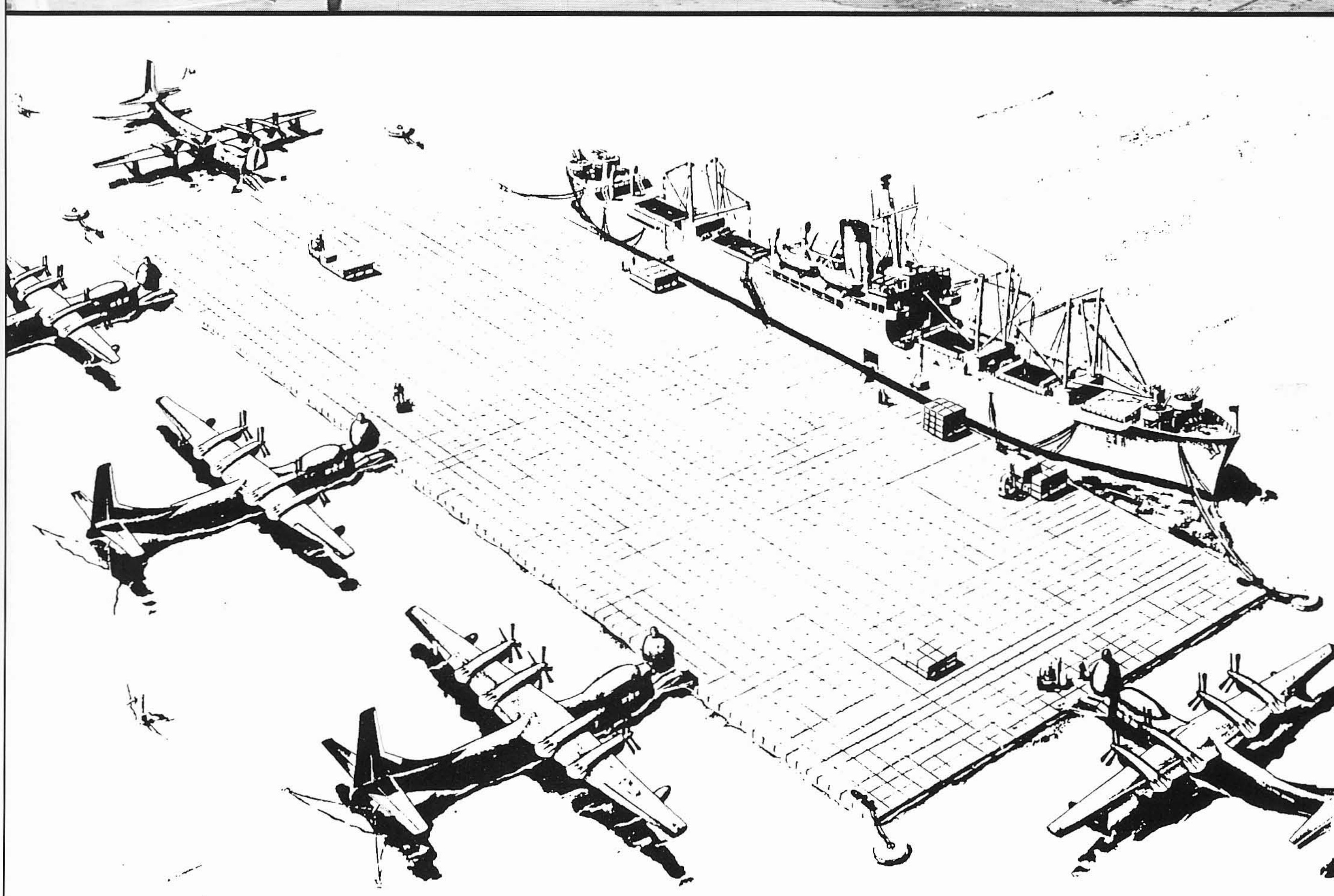
At right, the first Bowloader shortly after launching with the number four R3Y-1 in the background and a Martin P5M Marlin flying boat passing overhead. Note how much larger the flight deck area of the R3Y-2 was in comparison to the R3Y-1. (SDAM)

Like an LST, the R3Y-2 was designed to land guns, trucks, small tanks, troops, and cargo directly onto beaches. For the assault mission, the R3Y-2 lands in offshore waters and taxis to the beach. As the plane approaches the shore, the bow opens upward like the hood of a car and a ramp scissors upward-out-down to allow troops or equipment to debark immediately. To hold the aircraft stationary during loading or unloading, two engines, one on each wing, would be operating to keep the R3Y-2 relatively stable during amphibious operations.

To pull off the beach for takeoff required the pilot to start the two shut-off engines, and put all four engines into reverse and back off the beach. Once off the beach, the airplane would taxi into the wind and at full military power lift off occurred 30 seconds later.

At right bottom, line drawing of the Mobile Base Concept pontoon docks in use by five R3Y-2s and one Navy AKA. (via B. J. Long)

Below, the first R3Y-2 Bowloader and the sixth Tradewind built in flight shortly before assignment to VR-2. The sleek cruiser bow was replaced by this higher and shorter pug nose which included a redesigned flight deck aft of the cockpit. (via B. J. Long)



LEADING PARTICULARS OF THE R3Y-1 AND R3Y-2 TRADEWINDS

The multi-purpose transport had a normal crew consisting of two pilots, two flight engineers, one navigator and two radio operators. Personnel entrance doors were provided aft of the wing on the left and right sides of both airplanes. An additional entrance door on the R3Y-1 was located forward of the wing on the left side. The forward and aft pressure bulkheads on the R3Y-1, and the aft pressure bulkhead on the R3Y-2, were provided with access doors to the bow and tail compartments, respectively. The bow and tail compartments on the R3Y-1 and the tail compartment on the R3Y-2 were not accessable when the airplane was pressurized. Access to the R3Y-2 flight deck, which was located above the cargo compartment, was gained by means of a retractable ladder through one of two hatches in the forward overhead. A concealed wing access ladder could be lowered from the aft overhead for exit through the wing access hatch. On the R3Y-1, access to the bilges was through removable access doors in the floor of the cargo, flight engineer's entrance, and navigators compartments. On the R3Y-2, bilge access was through doors in the floor of the cargo compartment.

AIRCRAFT DIMENSIONS:

GENERAL:

WING SPAN		145' 9.722"
LENGTH	R3Y-1	139' 8.3"
	R3Y-2	141' 1.7"
TAIL HEIGHT ABOVE KEEL AT FIRST STEP		49' 0"
PROPELLER WATER CLEARANCE		
145,500lb gross weight		8' 9.2"
165,000lb gross weight		8' 5.2"
DESIGN GROSS WEIGHT		145,500lbs
MAX GROSS WEIGHT		165,000lbs

WING:

WING AREA, TOTAL	2,100sq ft
AIRFOIL SECTION:	
At Root Section	NACA 1420
At Construction Tip	NACA 4412
At Splice Section	NACA 4417
Average	18%
CHORD:	
At Root Section	21' 9"
At Construction Tip	7' 3"
Mean Aerodynamic	15' 8.5"
INCIDENCE:	
At Root	4°
Aerodynamic Washout	1°
Dihedral	1° 45'
Sweepback of Leading Edge	4° 34' 26"
Aspect Ratio (geometric)	10:1

AILERONS:

Span, each	28' 8.529"
Chord, average	28%

HIGH LIFT DEVICES:

Type	NACA Slotted flap
Span	53%
Chord	
Intermediate & outboard Sec.	27.5%
Inboard Section	13.5%

HORIZONTAL STABILIZER:

Span	51' 4"
Chord: Root	14' 4"
Tip	3' 10"
Incidence	4°
Aspect Ratio	6:1
Section & Thickness	NACA 0012-64 mod.

VERTICAL FIN:

Section & Thickness	NACA 0012-64 mod.
Aspect Ratio	2.16:1

HULL:

Width, Maximum		12' 6"
Width at Chine, maximum		10' 0"
Height, maximum		17' 6"
Length	R3Y-1	139' 8.3"
	R3Y-2	141' 1.7"
Draft, perpendicular to Load Water Line from Lowest Point of Hull:		
Cargo Condition (145,000lb)		6' .5"
Cargo Condition (165,000lb)		6' 4"
draft Minimum Required for Beaching Cradle Attachment		10' 9"

DISTANCE:

Bow to First Step Centeroid	58' 10"
Bow to Second Step	101' 10.33"
Step Depth	2' 5.5"
Angle of Normal Water Line	0° 30'
Angle of Keel to Ref. Line	4°
Angle of Heel at which Wing Touches Water	9° 48'
Height of Center of Gravity Above Center of Buoyancy	12' 0"

AUXILIARY FLOATS:

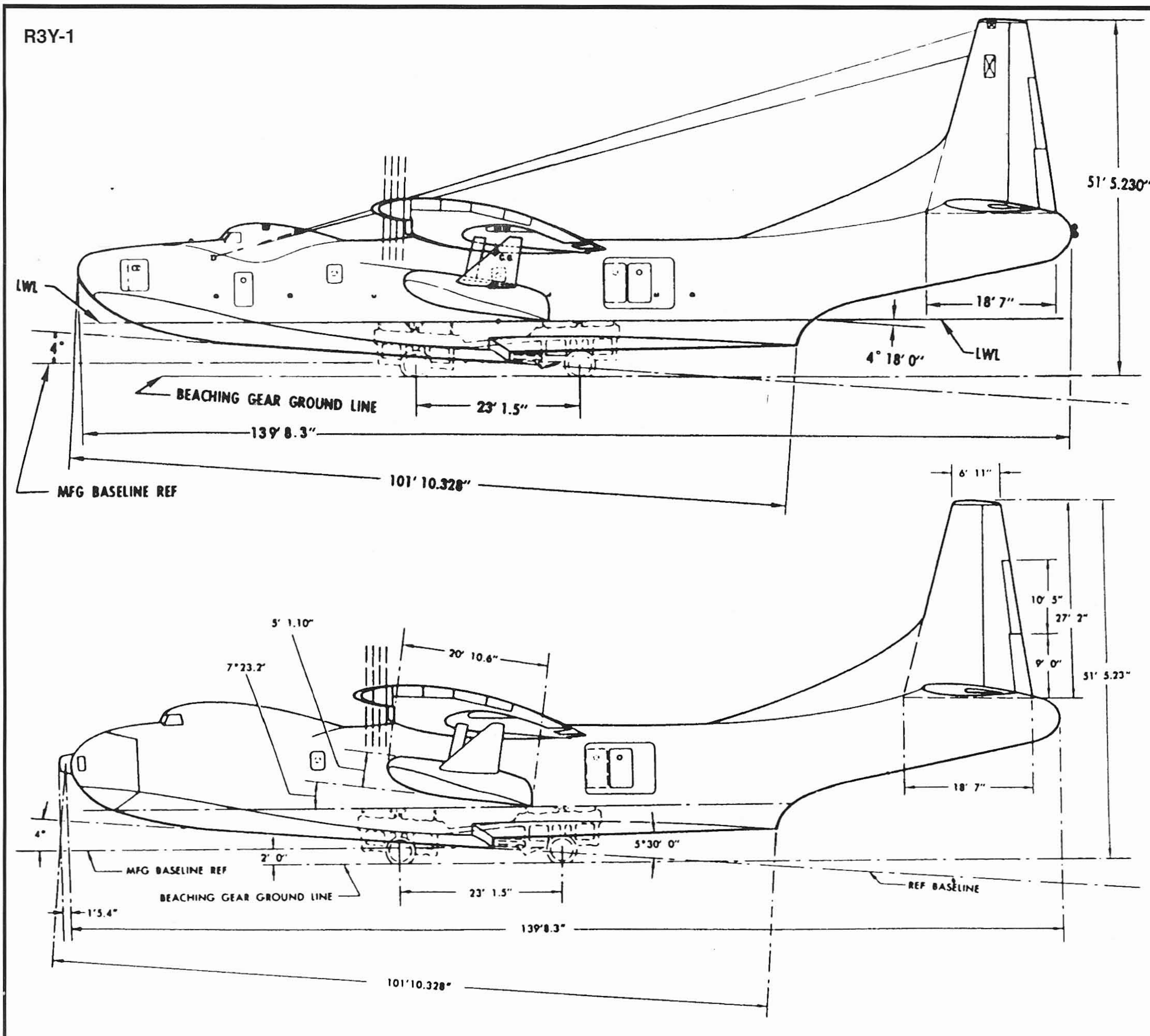
Width	3' 9.5"
Length	20' 10.6"
Height	5' 1"
Submerged Displacement of Each Float (64lb per cu ft)	12,850lb
Angle of Heel to Submerge	7° 25'
Distance from Normal Load Water Line to Lowest Point of Float	0
Distance from Center Line of Hull to Center of Buoyancy of Float	52' 6"

AREAS:

Wing, Total	2,100.7sqft
Wing Flaps	278.2sqft
Ailerons Aft of Hinge	116.2sqft
Aileron Balance Area	46.7sqft
Horizontal Tail Area (Total)	440sqft
Horizontal Stabilizer	241sqft
Elevators Aft of Hinge	133.1sqft
Elevator Balance Area	55.9sqft
Vertical Tail Area	350sqft
Vertical Fin	183.7sqft
Rudder Aft of Hinge	116.3sqft
Rudder Balance Area	50sqft
Dorsal Fin	108sqft

R3Y-2 PERFORMANCE SUMMARY

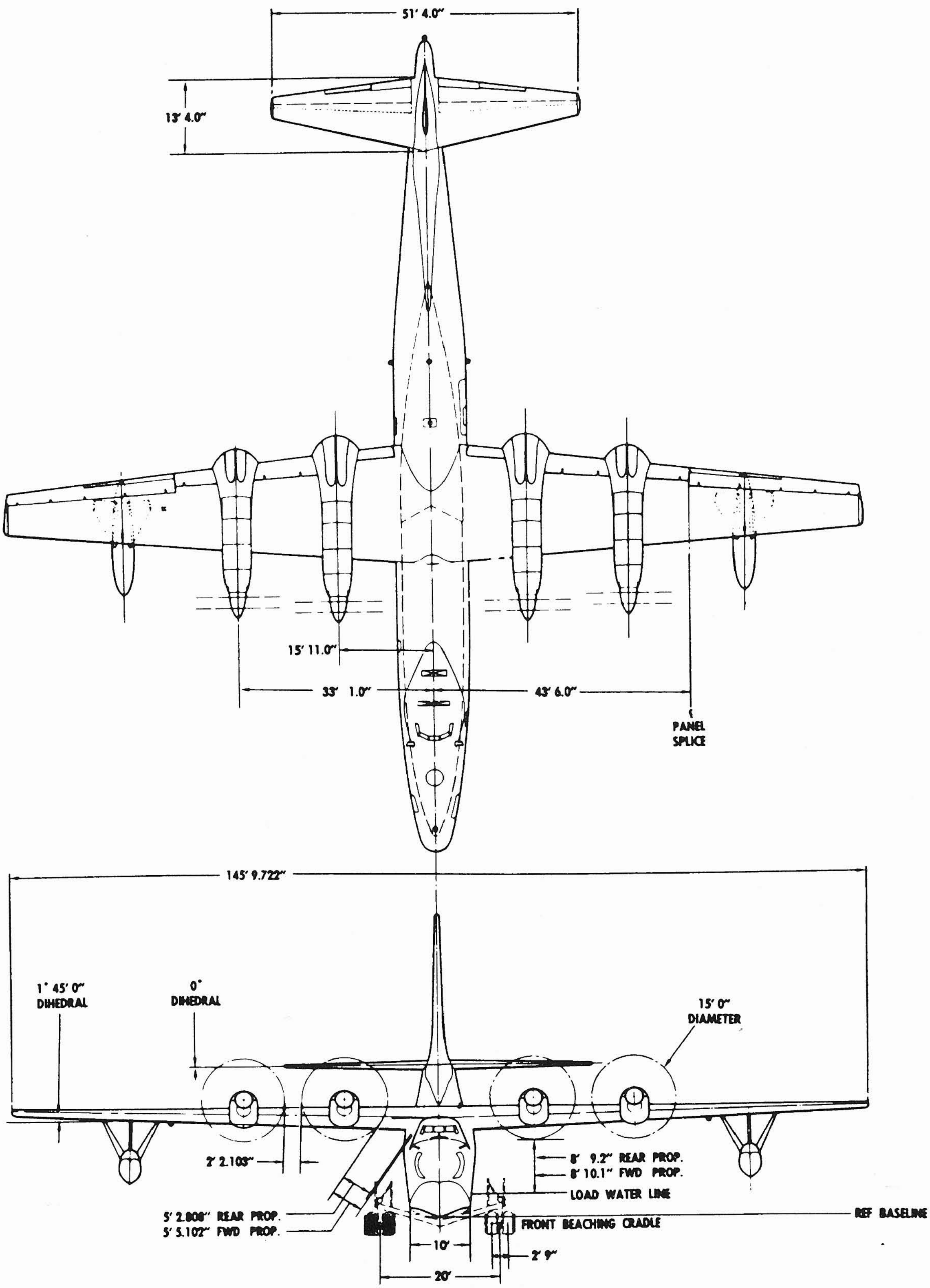
TAKE-OFF LOADING CONDITION		(1) Troop Trans. 106 troops	(2) Cargo	(3) Evac. Trans. 92 Litters 12 Attendants 480 lb. Baggage	(4) Personnel Trans. 106 Passengers 4240 lb. Baggage	(5) Ferry (c)
TAKE-OFF WEIGHT	lb.	145,500	145,500	145,500	165,000	161,713
Fuel	lb.	29,267	44,000	34,300	49,012	66,000
Payload	lb.	23,850	12,899	17,680	18,020	0
Wing loading	lb./sq.ft.	69.2	69.2	69.2	78.5	77.0
Stall speed - power-off	kn.	92	92	92	98	97
Take-off time at S.L. - calm	ft.	34	34	34	50	47
Take-off run at S.L. kn. wind	ft.					
Take-off to clear 50 ft. - calm	ft.					
Max. speed/altitude (B)	kn./ft.	300/25,000	300/25,000	300/25,000	291/25,000	292/25,000
Rate of climb at S.L. (B)	fpm	2250	2250	2250	1860	1920
Time: S.L. to 20,000 ft. (B)	min.	12.9	12.9	12.9	16.8	16.1
Time: S.L. to 30,000 ft. (B)	min.	25.9	25.9	25.9	25.6 to 25,000	24.3 to 25,000
Service ceiling (100 fpm) (B)	ft.	34,000	34,000	34,000	29,500	30,250
Combat range	n.mi.	1220	2100	1510	2060	3190
Average cruising speed	kn.	279	275	278	279	275
Cruising altitude(s)	ft.	32,500 - 35,500	32,500 - 36,750	32,500 - 36,000	28,500 - 35,500	30,000 - 37,000



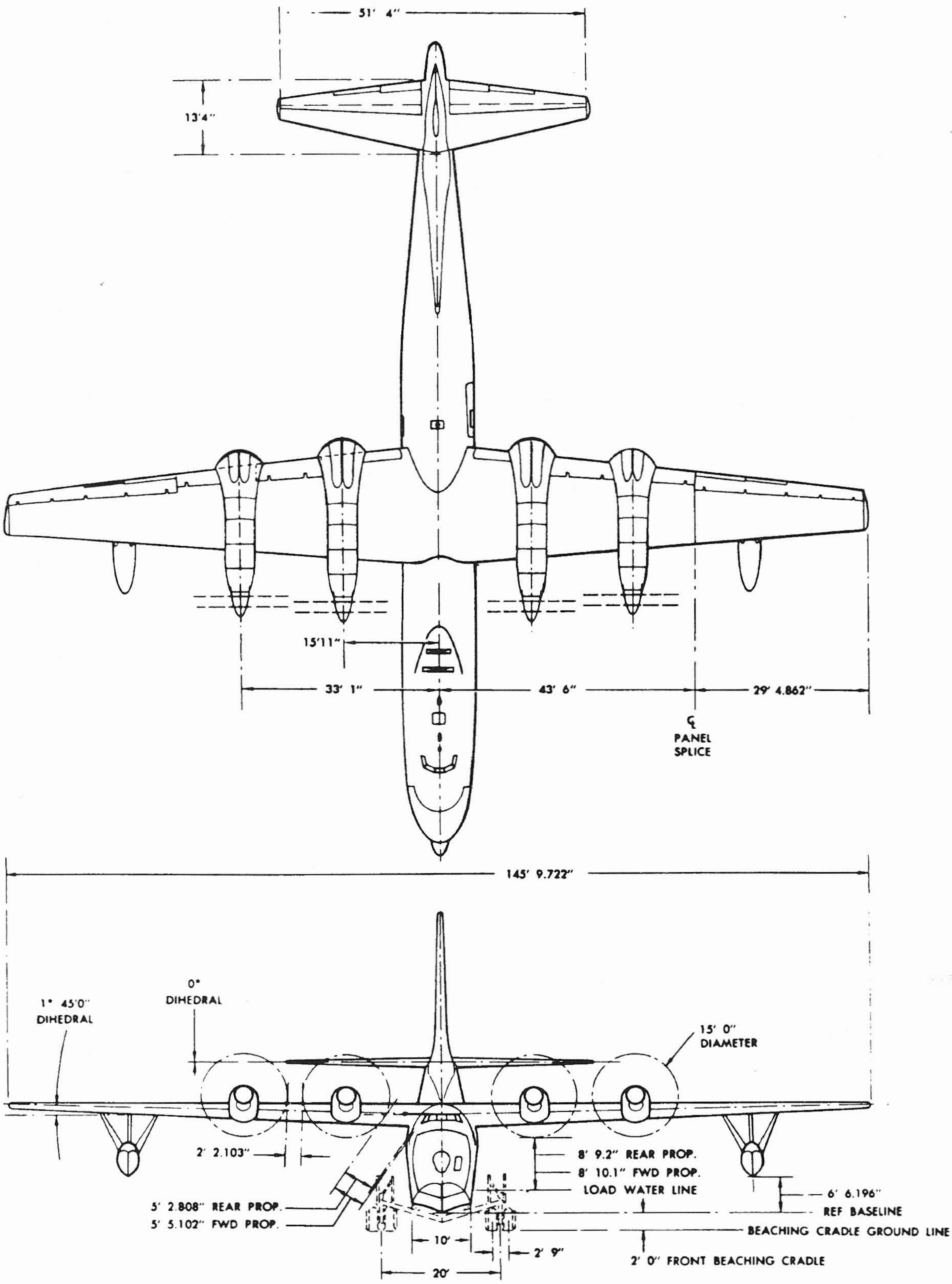
R3Y-1 PERFORMANCE SUMMARY

TAKE-OFF LOADING CONDITION		(1) CARGO	(2) PERSONNEL 80 Passengers	(3) MAX. CARGO	(4) MAX. FUEL
TAKE-OFF WEIGHT	lb.	145,500	145,500	165,000	156,284
Fuel	lb.	50,000	40,164	32,348	66,000
Payload	lb.	10,848	16,800	48,000	6,282
Wing loading	lb./sq.ft.	69.2	69.2	78.5	74.5
Stall speed - power-off	kn.	92	92	98	95.5
Take-off Time - calm	sec.	34	34	50	42
Take-off run at S.L. kn. wind	ft.	--	--	--	--
Take-off to clear 50 ft. - calm	ft.	--	--	--	--
Max. speed/altitude (1)	kn./ft.	308/23,000	308/23,000	299/21,000	303/22,000
Rate of climb at S.L. (1)	fpm	2,310	2,310	1,910	2,080
Time: S.L. to 20,000 ft. (1)	min.	12.3	12.3	16.0	14.0
Time: S.L. to 30,000 ft. (1)	min.	25.3	25.3	43.2	32.1
Service ceiling (100 fpm) (1)	ft.	34,800	34,800	30,300	32,300
Combat range	n.mi.	2,620	1,940	1,240	3,470
Average cruising speed	kn.	294	297	300	293
Cruising altitude(s)	ft.	33,000/37,000	33,000/36,800	29,000/34,200	30,400/37,500
LANDING WEIGHT	lb.	99,740	109,384	136,739	95,324
Fuel	lb.	4,240	4,048	4,087	5,040
Stall speed - power-off	kn.	76.4	80	89.4	74.6
Stall speed - with approach power	kn.	74.7	78.3	87.5	73

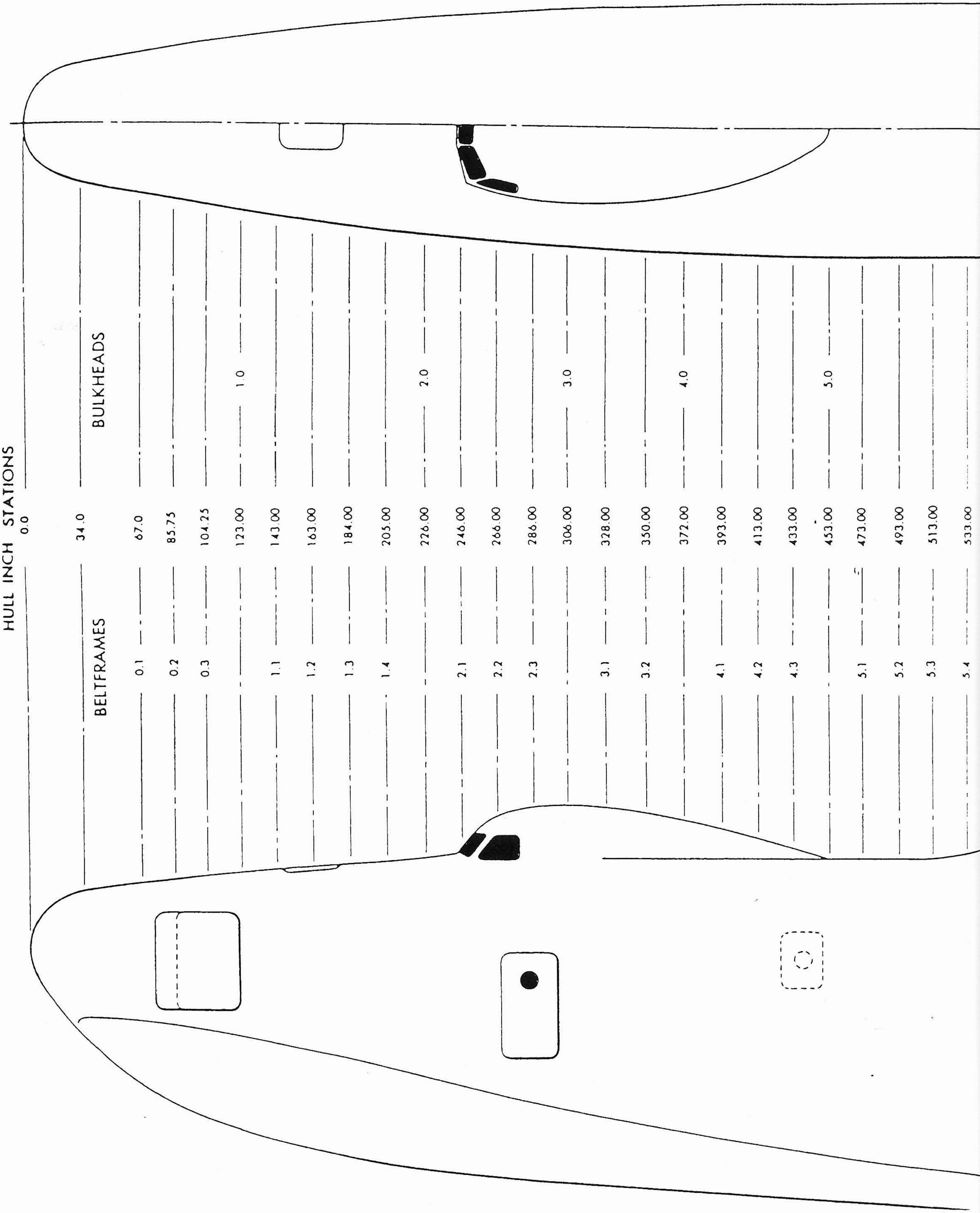
R3Y-1 GENERAL DIMENSSIONS



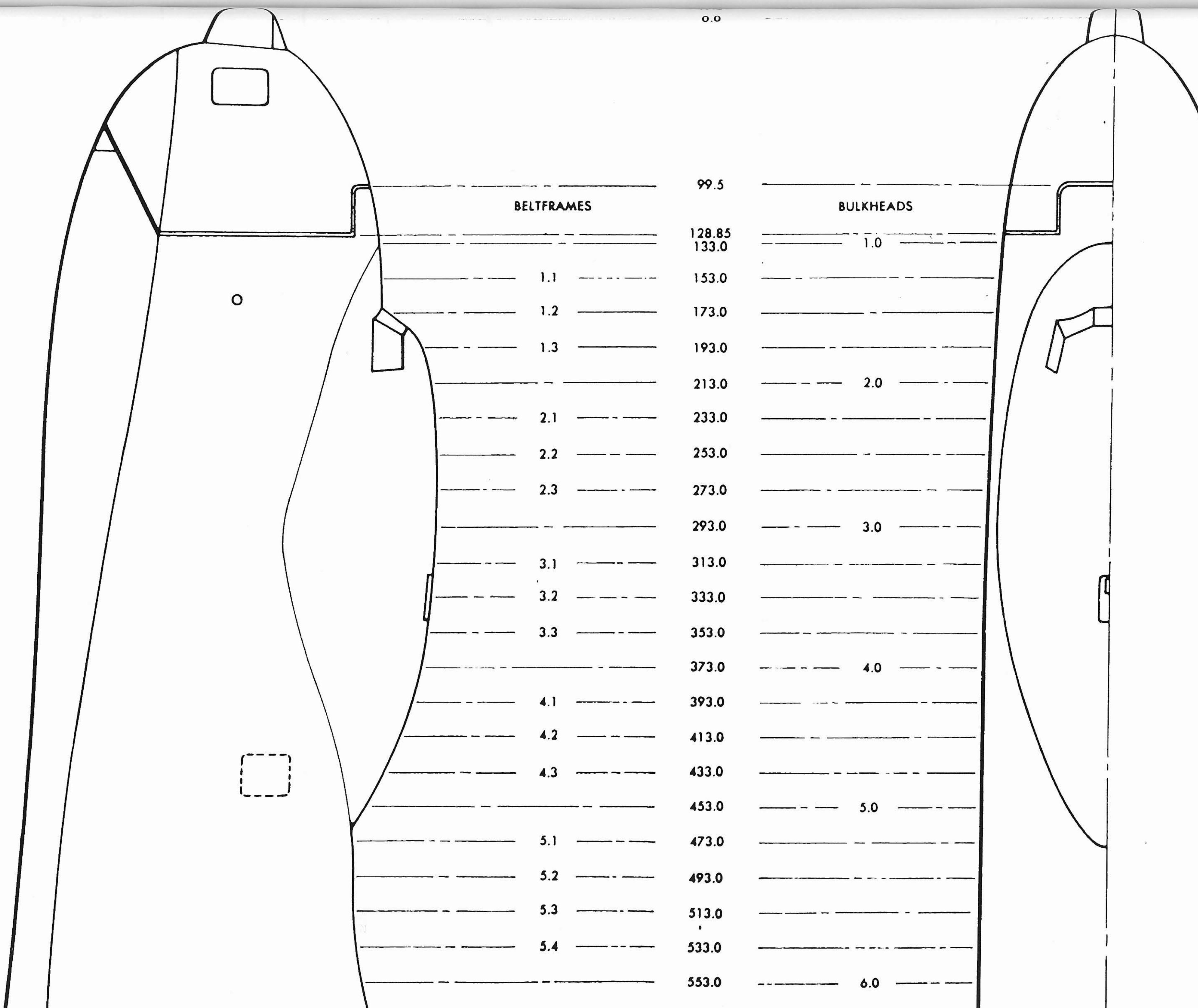
R3Y-2 GENERAL DIMENSIONS



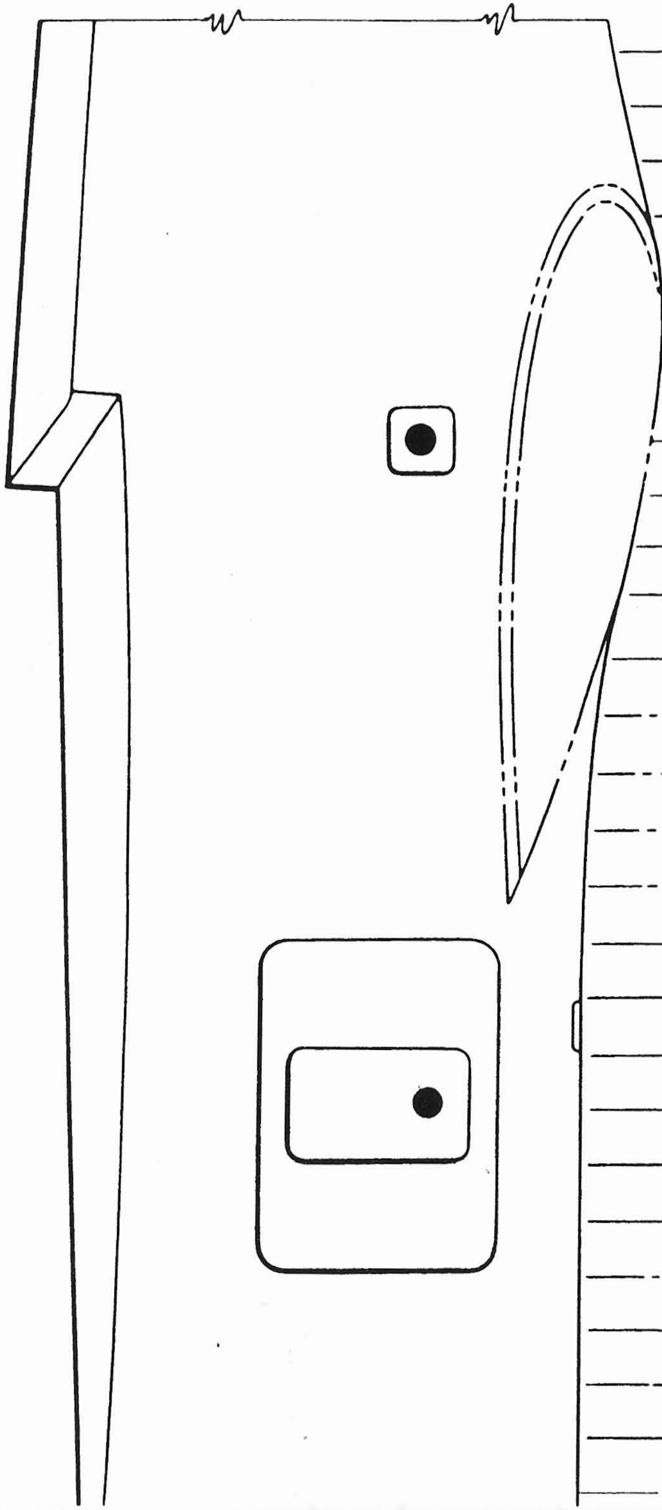
R3Y-1 1/72 SCALE STATION DIAGRAMS



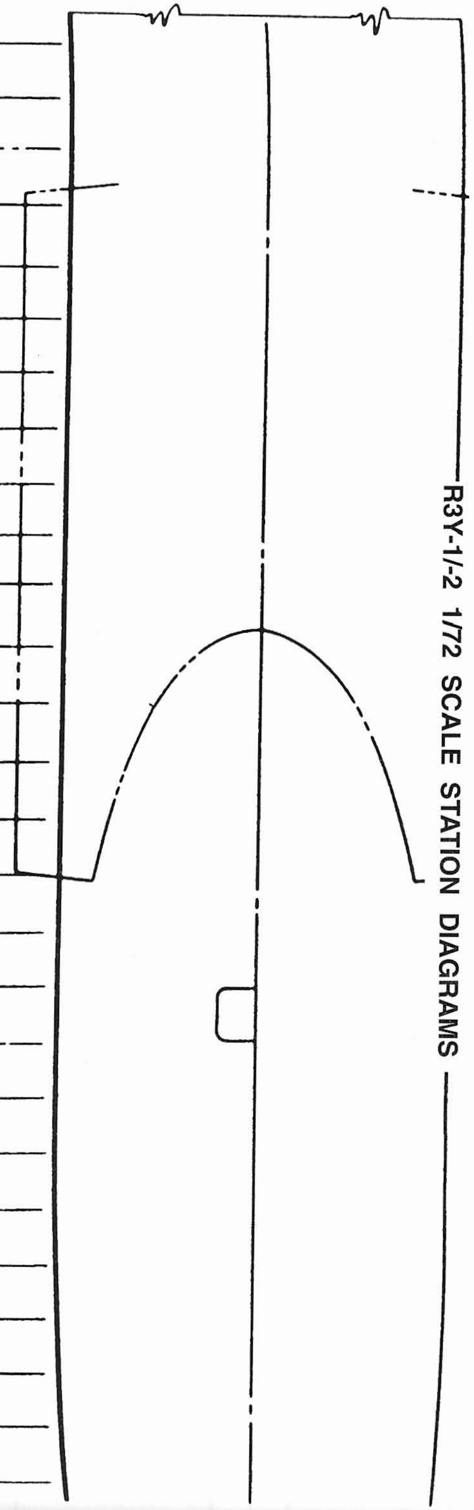
R3Y-2 1/72 SCALE STATION DIAGRAMS



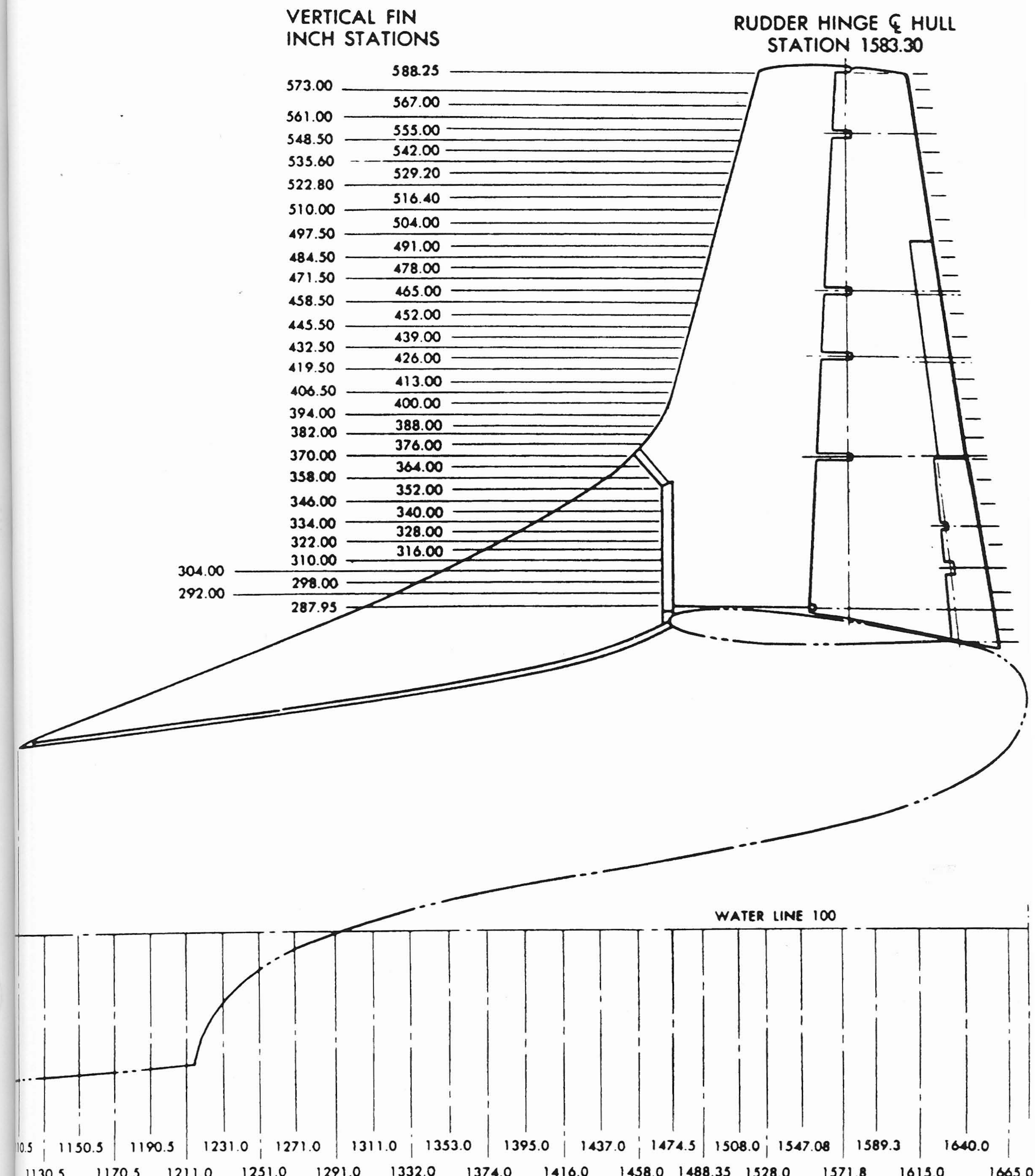
R3Y-1/-2 1/72 SCALE STATION DIAGRAMS



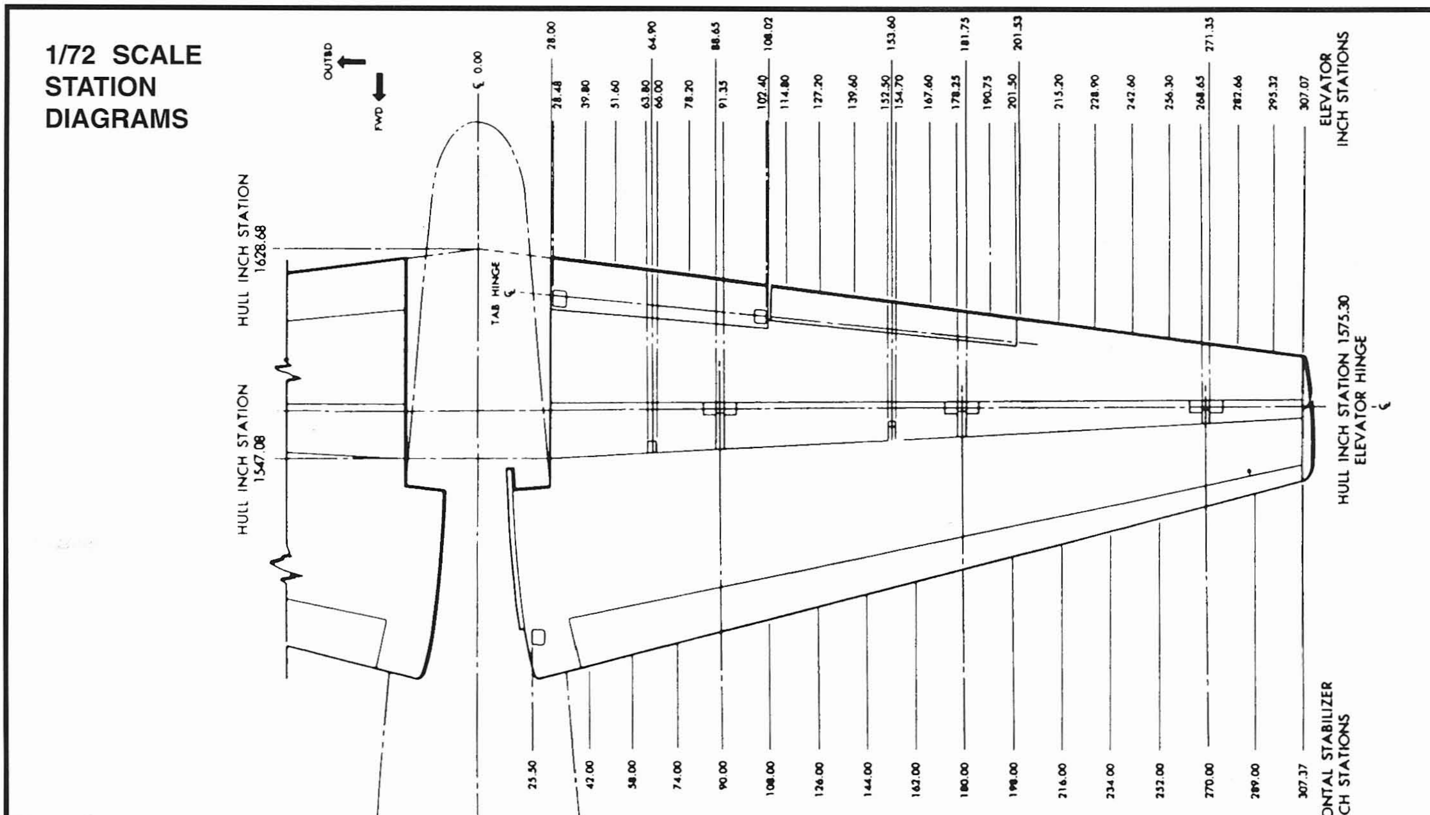
BELTFRAMES	HULL INCH STATIONS	BULKHEADS
6.1	573.0	
6.2	593.0	
6.3	613.0	
6.4	633.0	
	655.15	7.0
7.1	673.00	
7.2	693.00	
7.3	713.0	
7.4	733.0	
7.5	750.5	
	768.10	8.0
8.1	790.5	
8.2	810.5	
	830.5	9.0
9.1	850.5	
9.2	870.5	
	890.5	10.0
10.1	910.5	
10.2	930.5	
	950.5	11.0
11.1	970.5	
11.2	990.5	
	1010.5	12.0
12.1	1030.5	
12.2	1050.5	
	1070.5	13.0
13.1	1090.5	

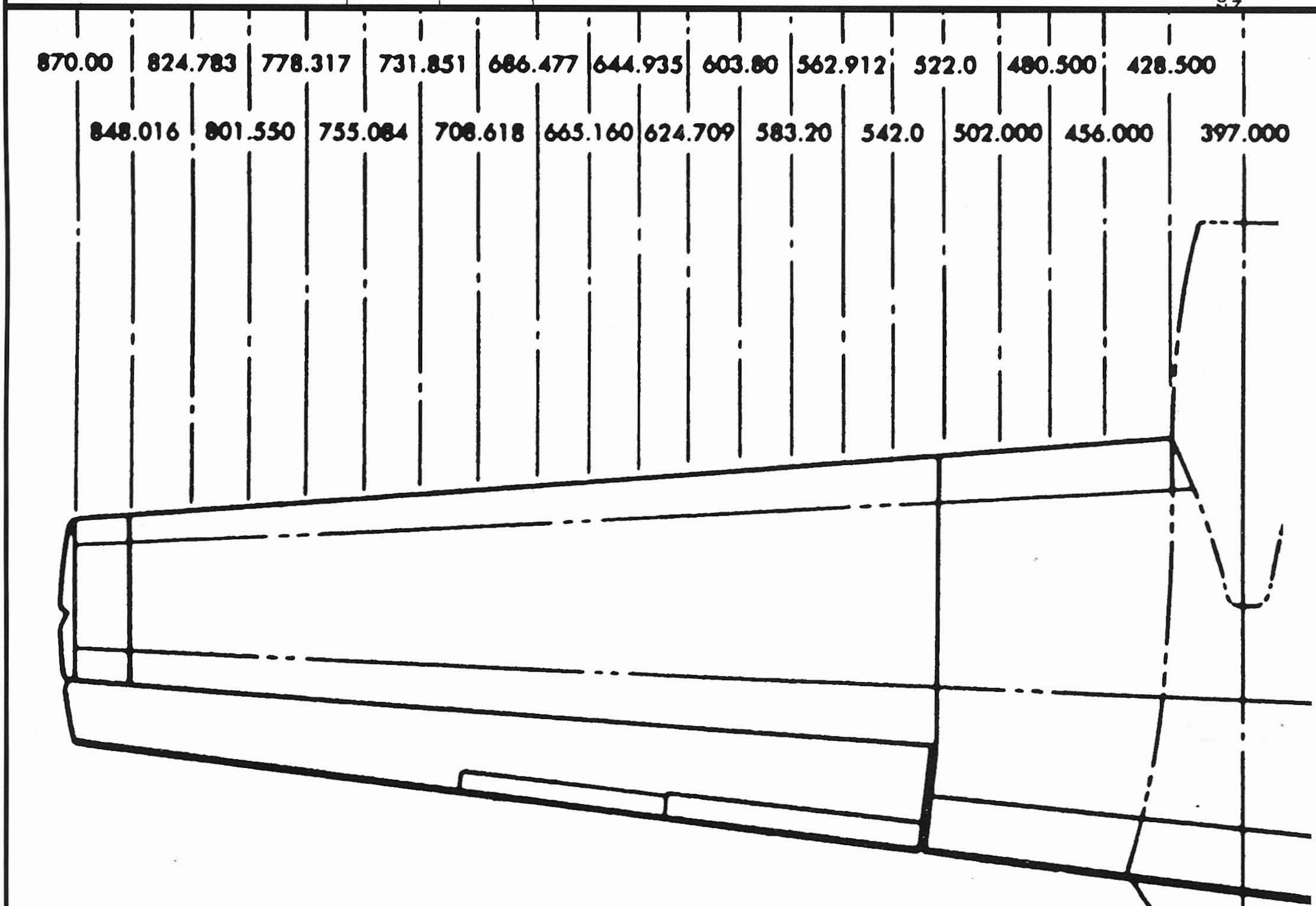


R3Y-1/-2 1/72 SCALE STATION DIAGRAMS

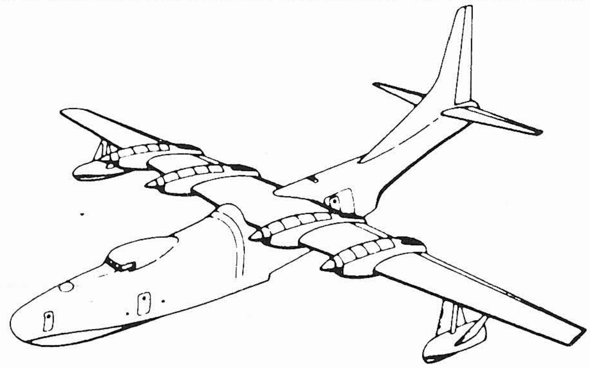


1/72 SCALE STATION DIAGRAMS



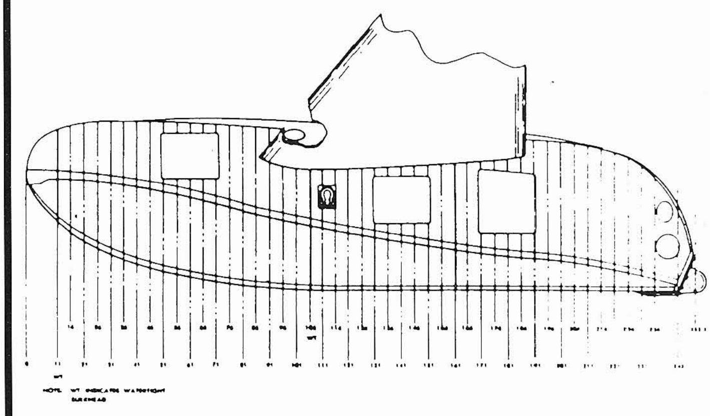


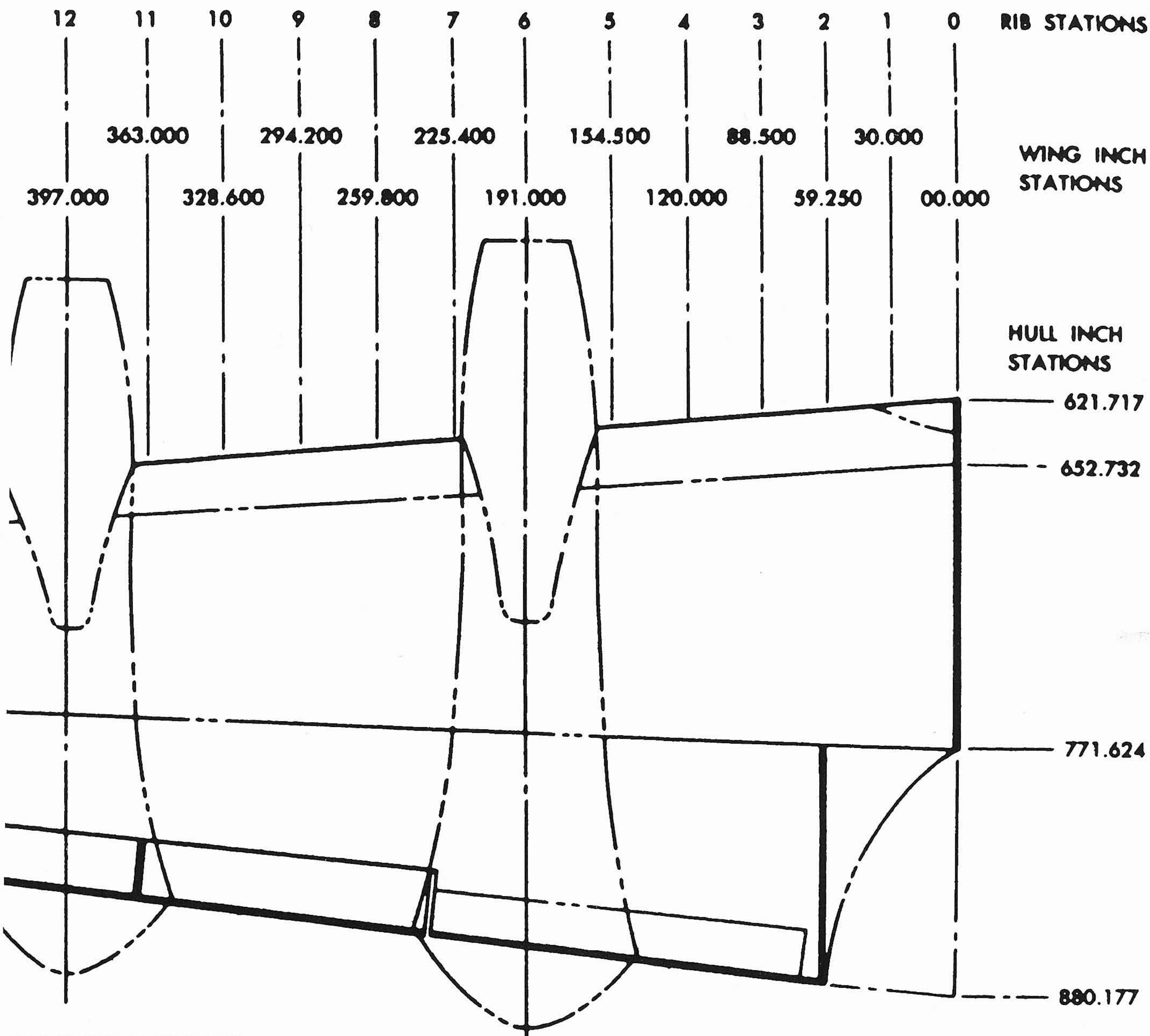
OUTER WING STATIONS



R3Y-1 TRANSPORT AIRPLANE

FLOAT STATIONS



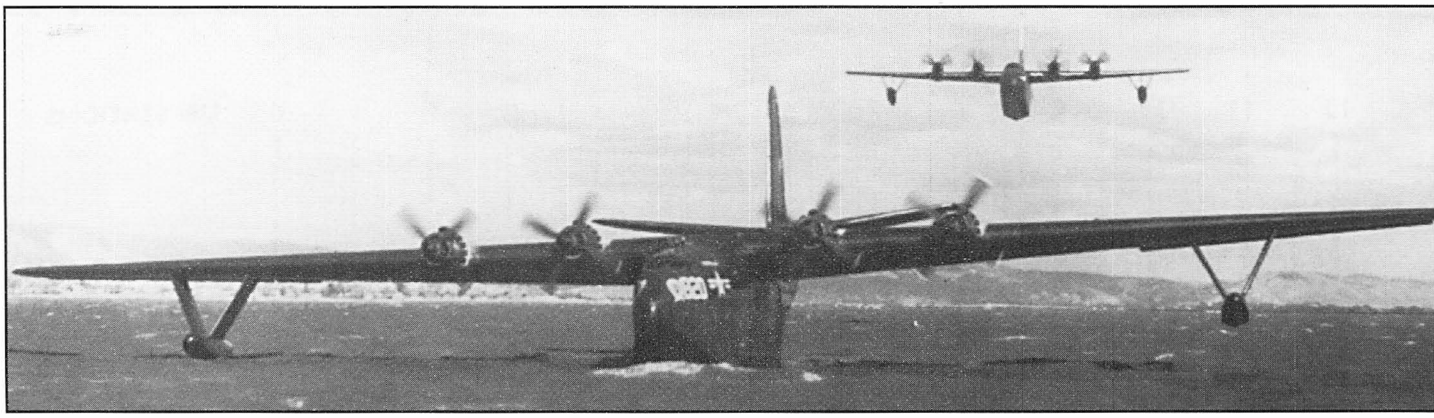


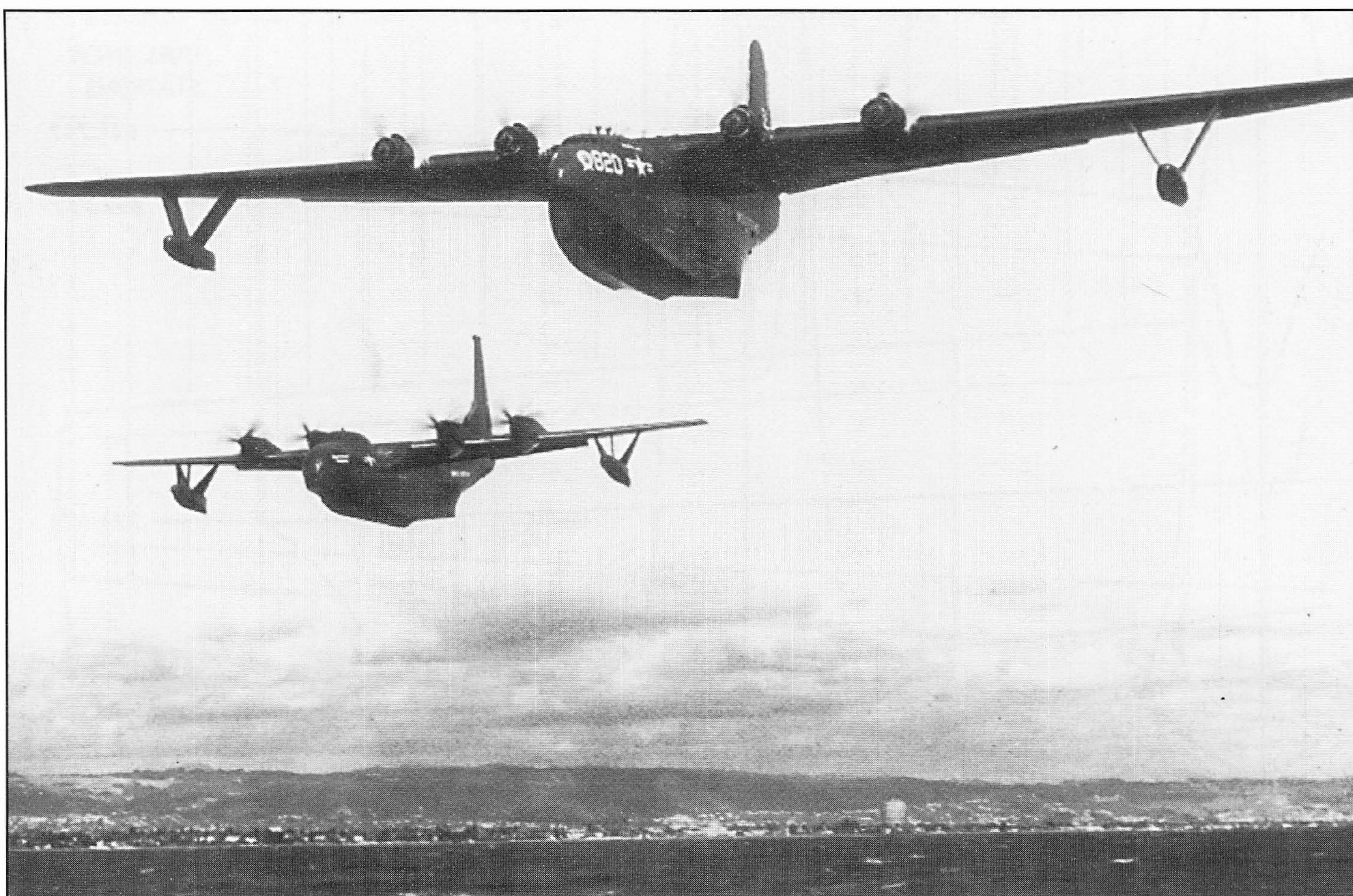
INNER WING STATIONS

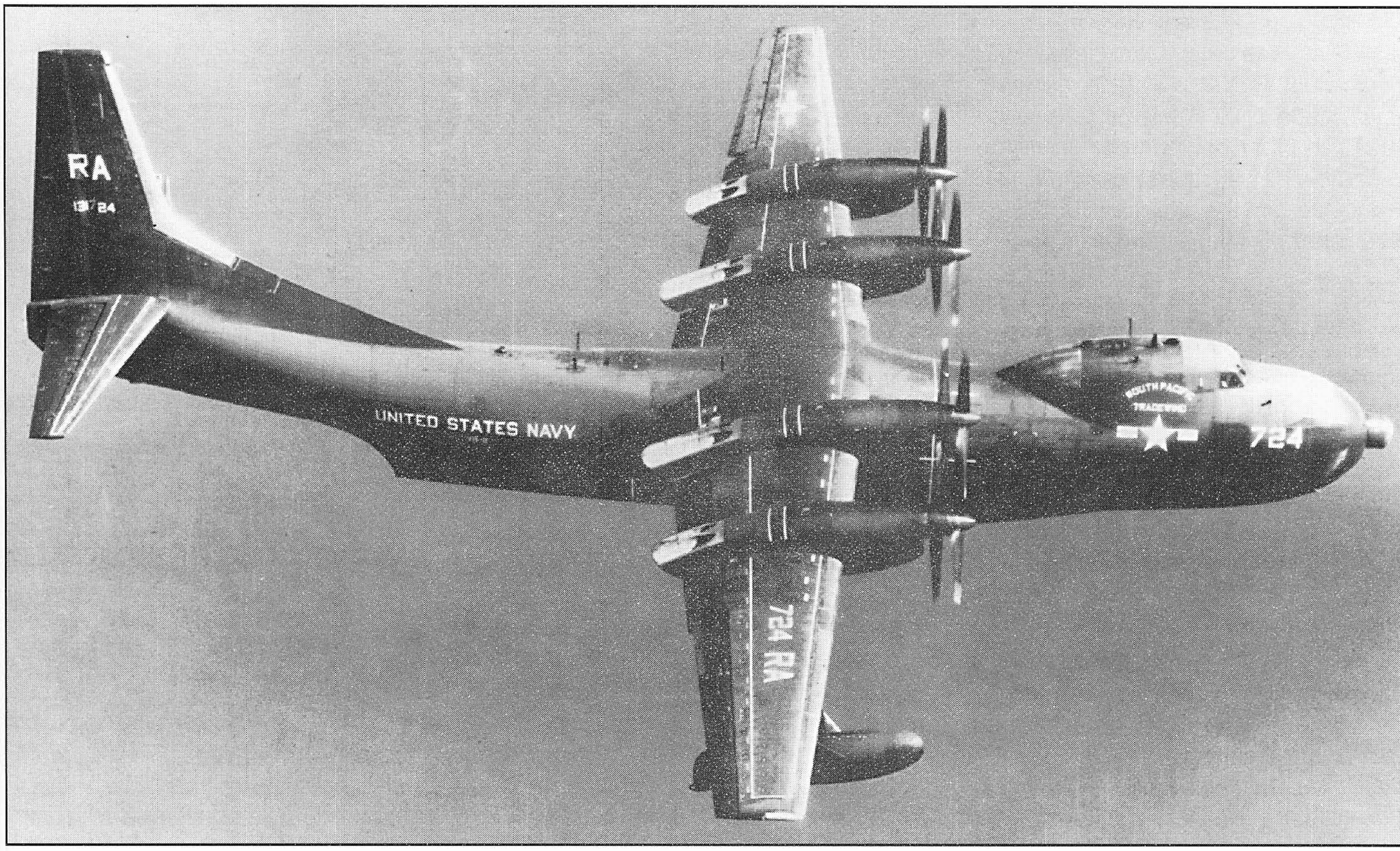
AIR TRANSPORTATION SQUADRON TWO (VR-2)

On 2 January 1956, the Navy formally announced that the R3Y fleet would be assigned to VR-2, where it would replace the Martin Mars flying boats on the Alameda-to-Honolulu run (see Naval Fighters Number Twenty-nine). The first Tradewind to arrive at VR-2's Alameda Base was the last aircraft built, BuNo 131724. 131724 was also the last of five R3Y-2 bowloaders. 131724 arrived at Alameda on Saturday, 31 March 1956, where it was named the "South Pacific Tradewind". The aircraft was delivered by the first VR-2 crew trained by Convair. The crew consisted of LCDR C. E. Feiock, LT J. L. Fletcher, LT J. A. McCaig, CPO G. J. Karl, CPO M. Kelly and CPO G. C. Denton.

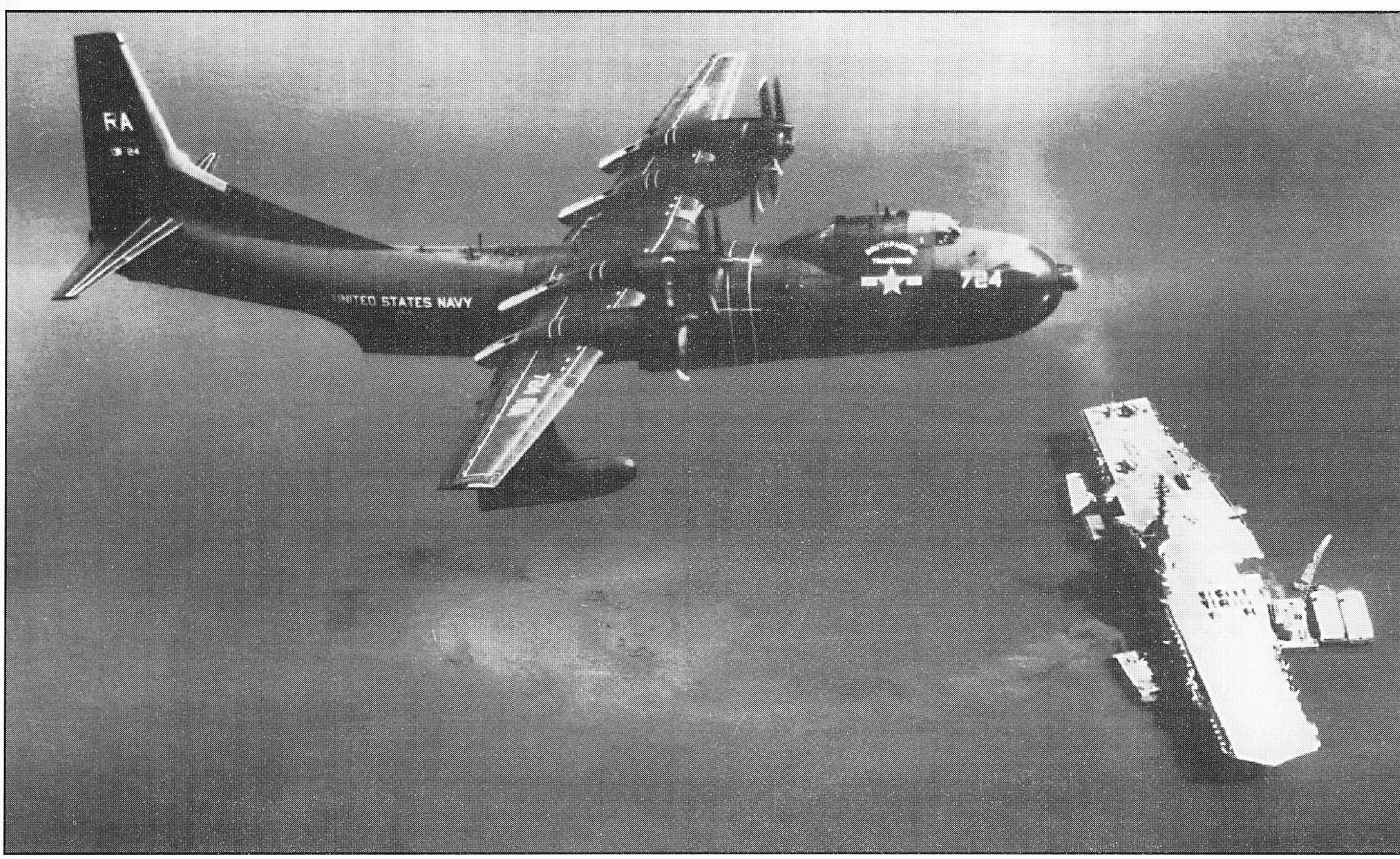
Below, the South Pacific Tradewind flys in concert with the Philippine Mars during delivery ceremonies of the R3Y-2 on 31 March 1956. (SDAM and S. Nicolau)





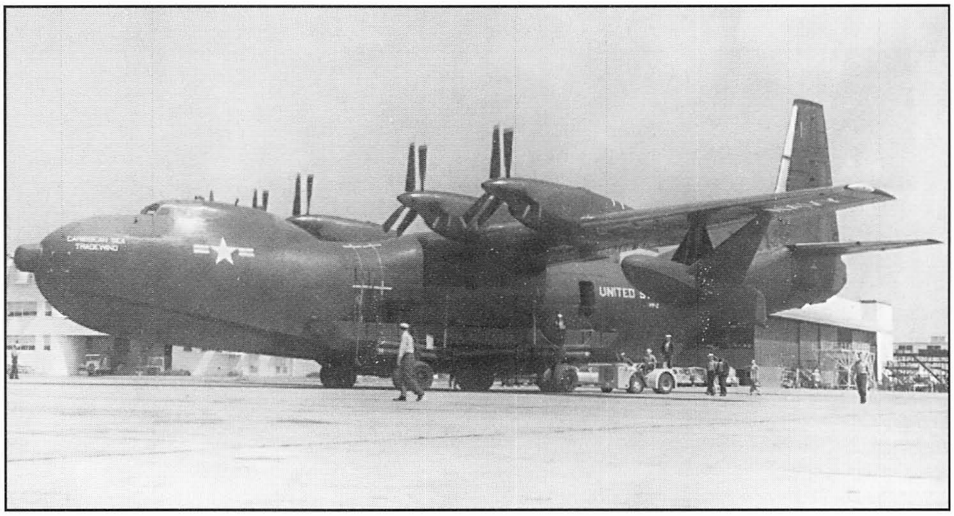


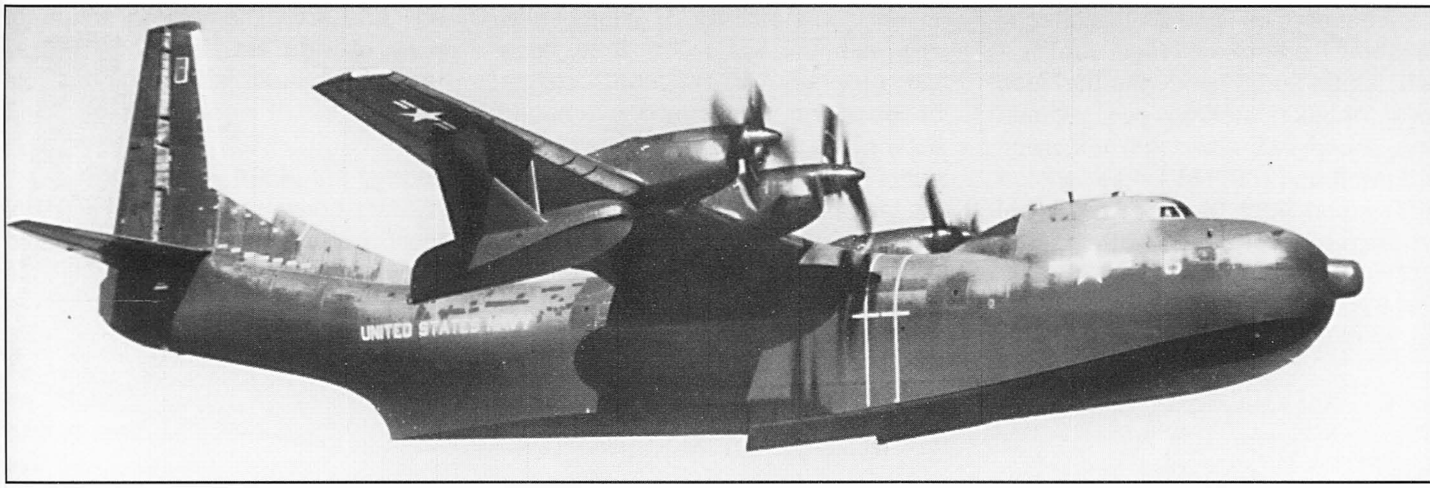
Two inflight photos of VR-2's first Tradewind, the South Pacific Tradewind. Seven Tradewinds would be christened with the names of the seven seas. They were the South Pacific Tradewind, Indian Ocean Tradewind, Coral Sea Tradewind, China Sea Tradewind, South Atlantic Tradewind, Arabian Sea Tradewind, and the Caribbean Sea Tradewind. Note the locations of the tail and wing codes, wing walks and the aircraft's name. (USN & Bob Lawson)



The second Tradewind assigned to VR-2 was the Caribbean Sea Tradewind, R3Y-2, 131723. It arrived at Alameda on 7 April 1956. In June 1957, she lost her number one prop assembly 175 miles out of San Francisco on the way to Hawaii. A safe return to Alameda was made but

At right, early Alameda photo of the Caribbean Sea Tradewind before squadron tail codes were added. (USN) Below, shortly after its arrival the Caribbean Tradewind made a cross-country trip to NAS Philadelphia. (Balogh via Menard)





prop, gearbox and engine problems would continue to plague the flying boats.

This was followed by delivery of R3Y-1, 128449, on 17 May. This was a cruiser bow which was named the China Sea Tradewind. The fourth delivery was that of R3Y-1, 128448, the Coral Sea Tradewind on 15 June 1956.This was the same aircraft which had set the transcontinental seaplane record in February 1955. On 10 May 1957, while on a training flight out of Alameda, the number 3 engine ran away and all efforts to control it failed. CDR Elbert Binkley initiated a steep dive, which brought the stricken craft back over San Francisco Bay for an emergency landing. While setting up for his landing, CDR Binkley found the aircraft uncontrollable below 180 knots. The ensuing 200 knot landing tore a large hole in the hull and the aircraft sank in nine feet of water. This proved to be the end of the line for the Coral Sea Tradewind, which was stripped of equipment, refloated, and then scrapped.

The fifth R3Y delivered to VR-2 was bowloader 128450, which was christened the South Atlantic Tradewind. It was received on 5 September 1956, and was followed by bowloader 131722 on 28 September, which was dubbed the Arabian Sea Tradewind.

Above, the fifth R3Y delivered to VR-2 was R3Y-2 128450. (via Combat Models)

The seventh aircraft delivered was the Indian Ocean Tradewind. It would become VR-2's most famous

Below, two bowloaders and two cruiser bow Tradewinds from VR-2 flying in formation over the Pacific coast on 5 June 1957. The three leading aircraft are equipped with in-flight refueling pods. (via Bob Lawson)

R3Y and ultimately be responsible for the cancellation of the program. The cruiser bow 128446 set a Honolulu-to-Alameda record on 18 October 1956. It bettered the previous seaplane record held by the Caroline Mars by 3 hours and 46 minutes, when it completed the flight in 6 hours and 45 minutes. The aircraft took off from Keehi Lagoon, Honolulu, at 9:08 a.m., and landed at NAS Alameda at 3:53 p.m. The Navy flight crew, under the command of LCDR C. E. Felock, were CDR N. E. Broyles and CDR E. B. Bunkley, co-pilots; LT Frank H. Parker and ENS A. G. Jacobs, navigators; ADC R. G. Barry, plane captain; ADC Phagan; ADC J. M. McGann, AD1 A. L. Williams; AE1 W. G. Kelly; AM1 R. R. Brockington, AL1 R. R. Caron, ABC J. E. Harrison and AN D. J. Murphy. In addition, Convair's Chief Engineering Test Pilot Don Germeraad and company service representative Walter Belliston were aboard as observers.

During the ferry flight to Honolulu, the Indian Ocean Tradewind crew had volunteered to rescue the crew and passengers of a Pan Am Boeing Stratocruiser, which was ditching due

Above, R3Y-1 Indian Ocean Tradewind taxies into the Keehi Lagoon on Oahu after landing from its ferry flight from Alameda, in preparation for its record-breaking return flight. (SDAM)

Below, the docked Indian Ocean Tradewind with the skyline of Honolulu in the background. Note the three crew passenger doors in the bow and fore and aft of the wing. (SDAM)

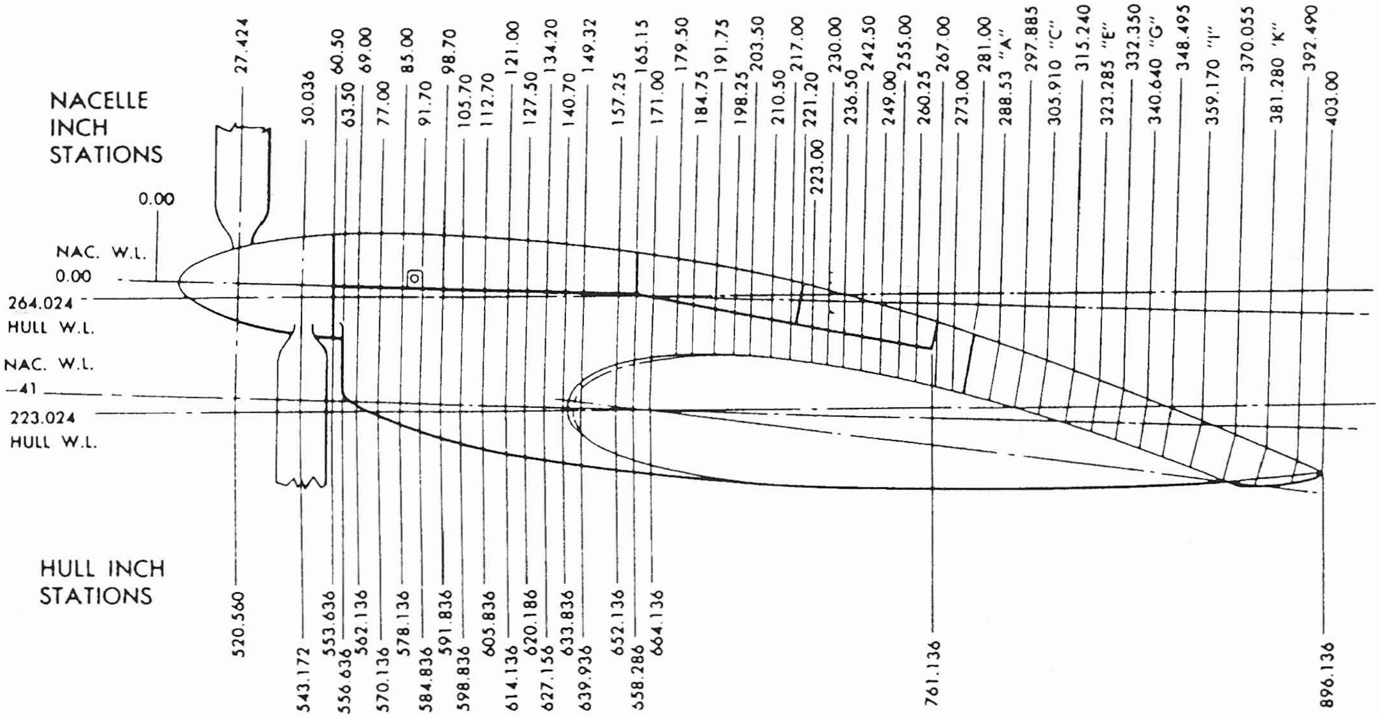
to engine problems. In the end, the passenger plane was able to ditch alongside a Coast Guard Weather Ship.

On 24 January 1958, the famous Indian Ocean Tradewind would become infamous. On a return flight from Barbers Point to Alameda, while still 385 miles off the California coast, the number two engine's gearbox disintegrated. The propeller sheared off the engine and tore a large jagged hole in the fuselage side at the leading edge of the wing. The rapid decompression forced a reduction in altitude from 21,000 feet to 15,000 feet where a Mayday was sent and emergency electrical repairs were made. Escorted by an Air Force HU-16 Albatross and a Coast Guard P4Y-1 Privateer, the heavily damaged Tradewind limped into San Francisco Bay shuddering and shaking. A successful landing was made in poor weather, but the loss of the number two engine had severed all controls to the number one engine. The crew was unable to reverse the pitch or even shut down the number one engine. During the taxi, the flying boat became uncontrollable and crashed into a seawall, tearing out the forward hull. Sixteen of the seventeen-man crew evacuated the aircraft, as the seventeenth man, an engine mechanic, crawled into the vibrating and shaking wing and manually shut down the engine. This accident essentially put an end to the program, as all Tradewinds were immediately grounded never to fly again. In spite of the incident, the Indian Ocean Tradewind had once again broken the Honolulu-to-San Francisco speed record by touching down in five hours and fifty-four minutes.

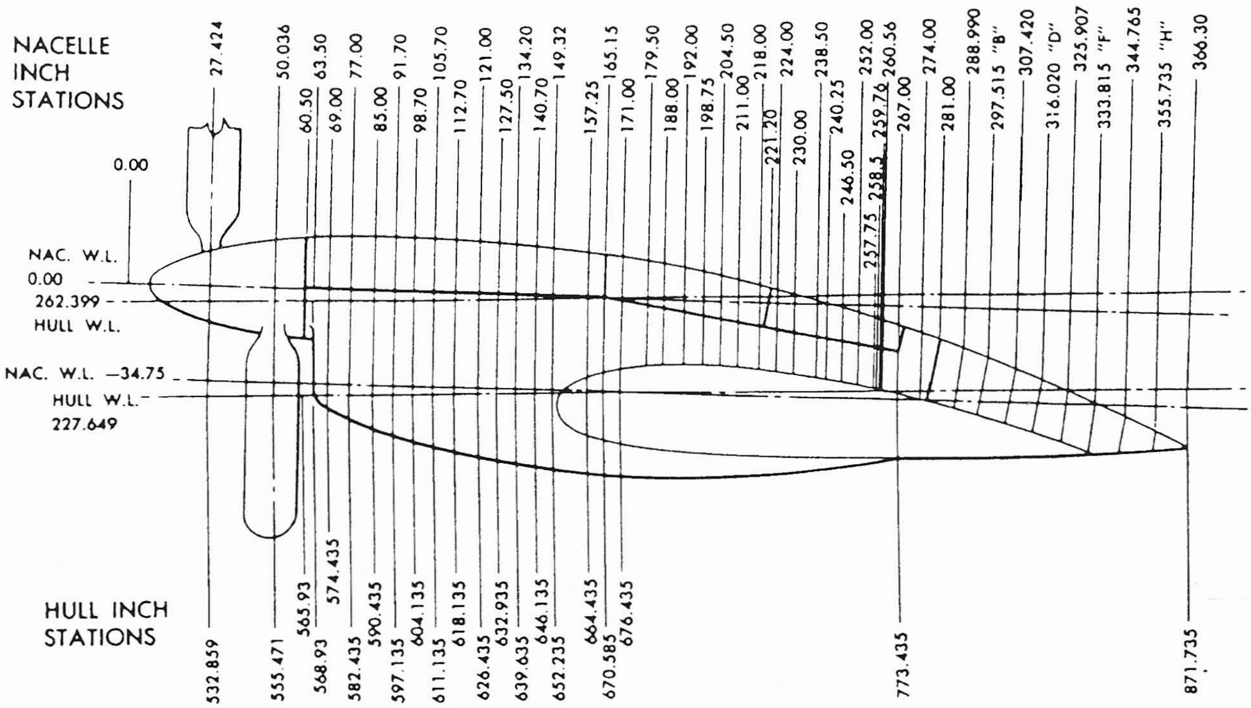
Following a BuAer recommendation, the CNO directed that the R3Ys be withdrawn from service and stricken on 16 April 1958. The flying boats remained in storage until March 1959, when they were given over to scrappers for their final demise. Today, the only record of their existence is a few lingering Xt-40 engines in museums.

Total flight time for the Tradewind fleet had only been 3,302 hours. The number two aircraft (128446) had flown the most with 716 hours, and number eight (131721) had flown the least with only 40 total hours. The breakdown for the eleven aircraft is: 128445, 268 hours; 128446, 716 hours; 128447, 126 hours; 128448, 422 hours; 1288449, 340 hours, 128450, 205 hours; 131720, 172 hours; 131721, 40 hours; 131722, 421 hours; 131723, 316 hours; 131724, 276 hours.

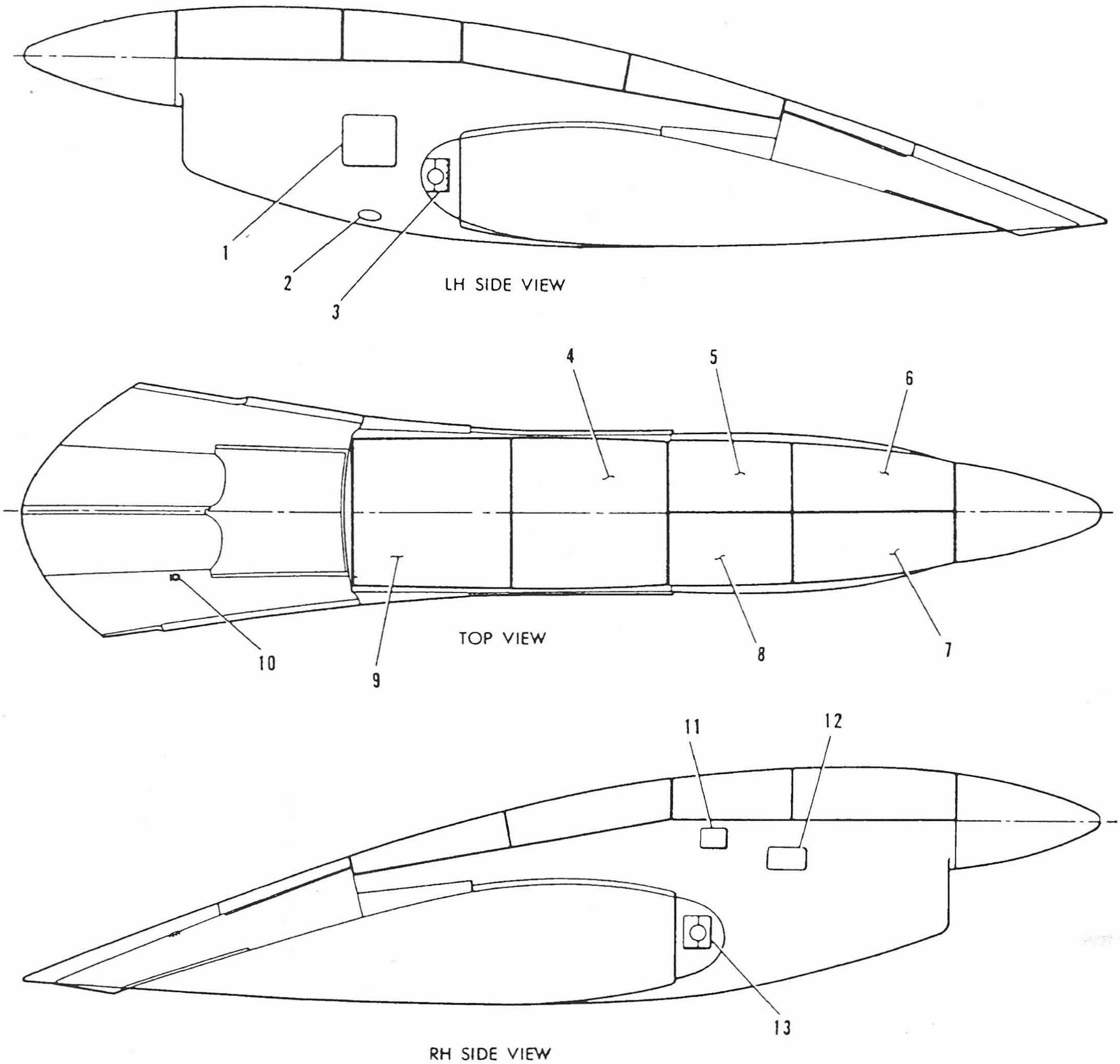
Below, the end of 128446 as she lays on the seawall with her belly ripped open from the bow to the wing's leading edge. The runaway number one engine is still running at high rpms as a rescue chopper approaches. The jagged hole in the fuselage side can be seen where the propeller from the number two engine had struck the fuselage prior to spinning off into the ocean. (via Bob Lawson)



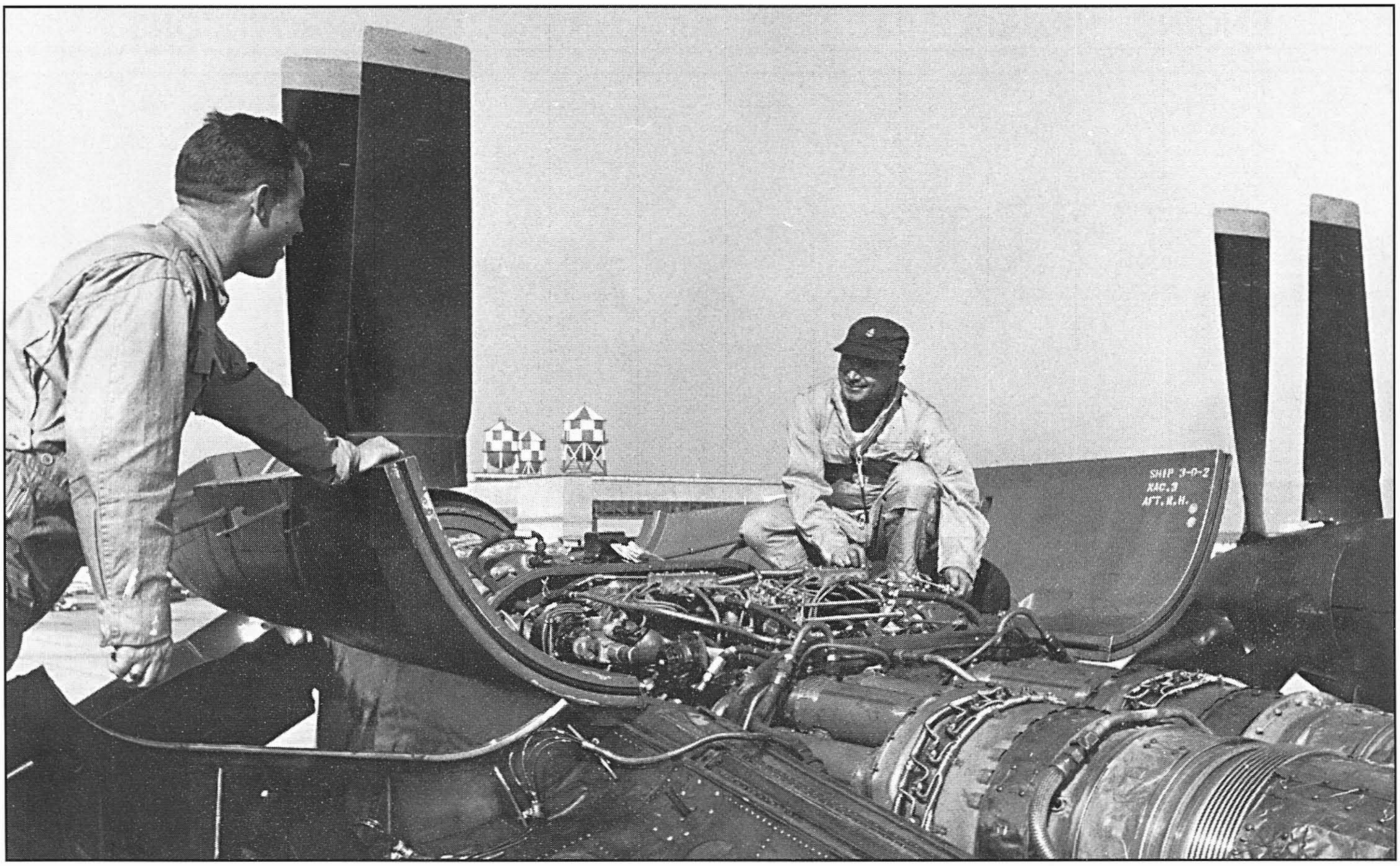
INBOARD NACELLE

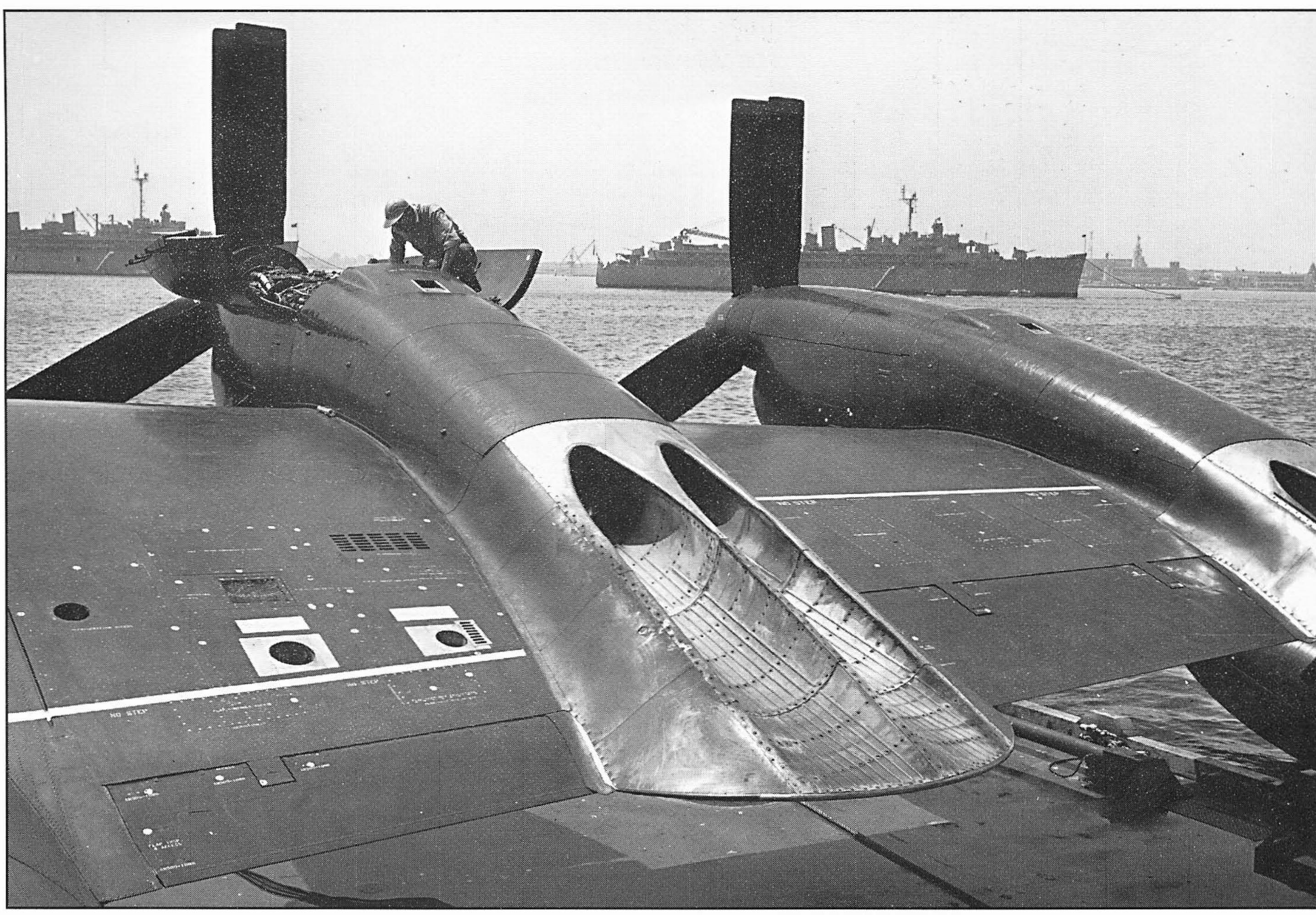


ENGINE NACELLE ACCESS AND INSPECTION PROVISIONS



1. Side Access Door
2. Oil Drain Access Door
3. LH Wing Access Door
4. Turbine Access Door
5. LH Compressor Access Door
6. LH Gear Case Access Door
7. RH Gear Case Access Door
8. RH Compressor Access Door
9. Tail Pipe Access Door
10. Work Stanchion Support Access Door (Inbd Nac Only)
11. Oil Quantity Gage Access Door
12. Oil Diverter Valve Access Panel
13. RH Wing Access Door

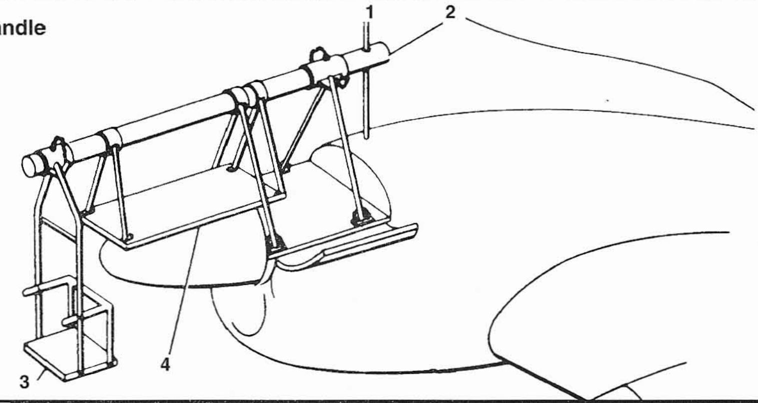

SHIP 3-0-2
XAC.3
AFT.R.H.


NO STEP
NO STEP

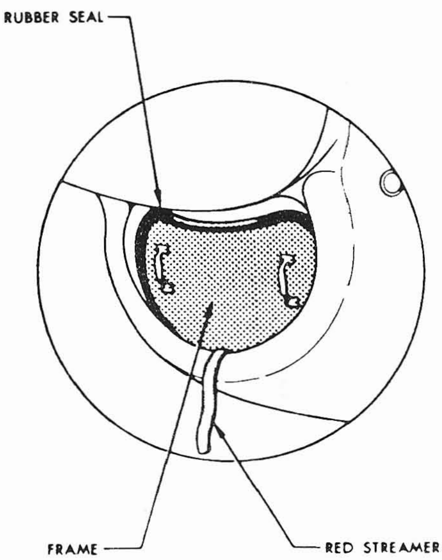
ENGINE INSTALLATION AND EASE OF MAINTENANCE

The Allison T40 was developed for the U.S. Navy, consisting of two axial-flow power sections driving two Aero-products three-blade, co-axial, contra-rotating airscrews through a common reduction gear. The power sections were connected together so that in effect they formed a single unit and were connected to the reduction gear by extension shafts. Each power section could operate the contra-rotating airscrews independently or together.

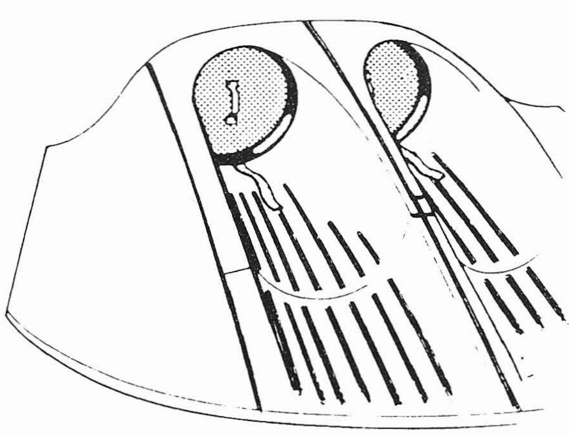
1.) Beam Handle
2.) Beam
3.) Cradle
4.) Platform



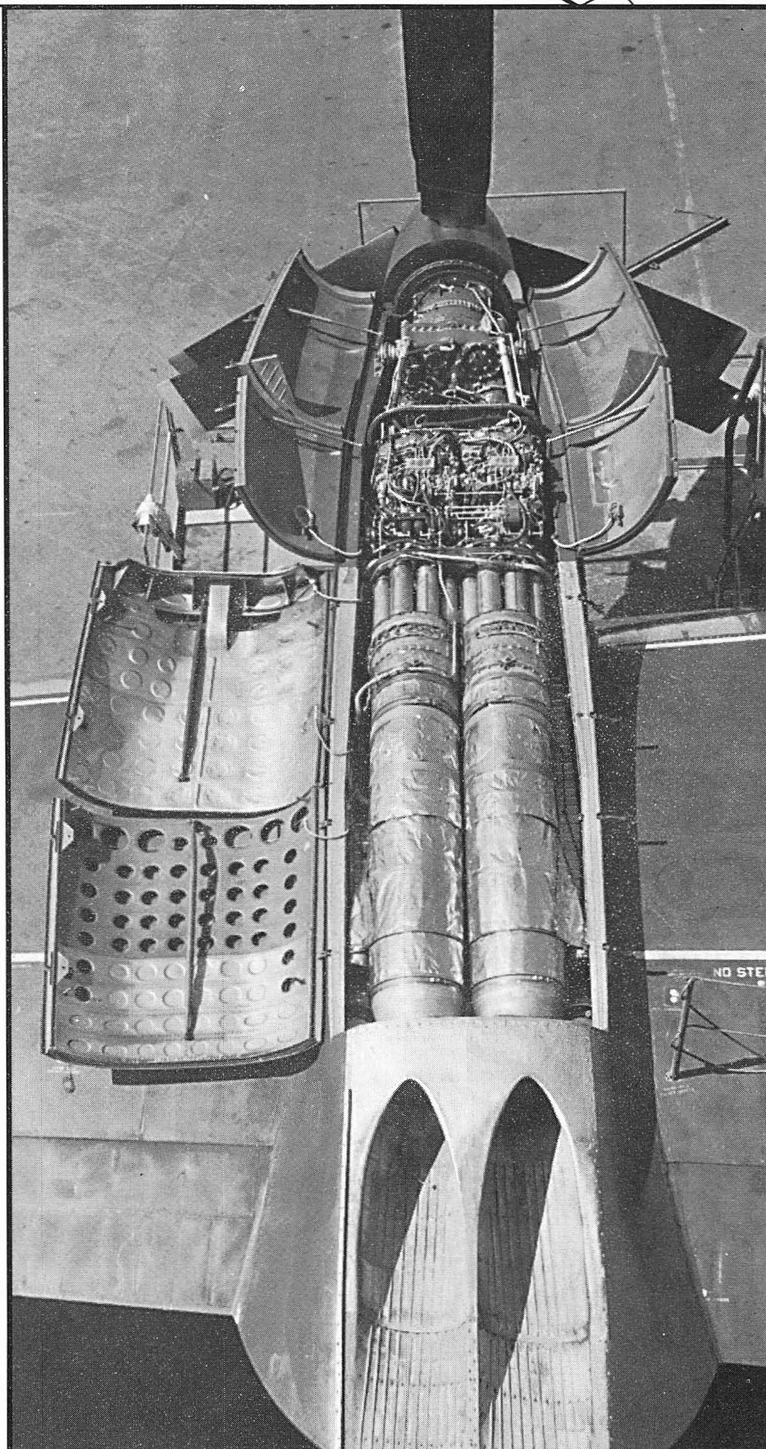
ENGINE COVERS

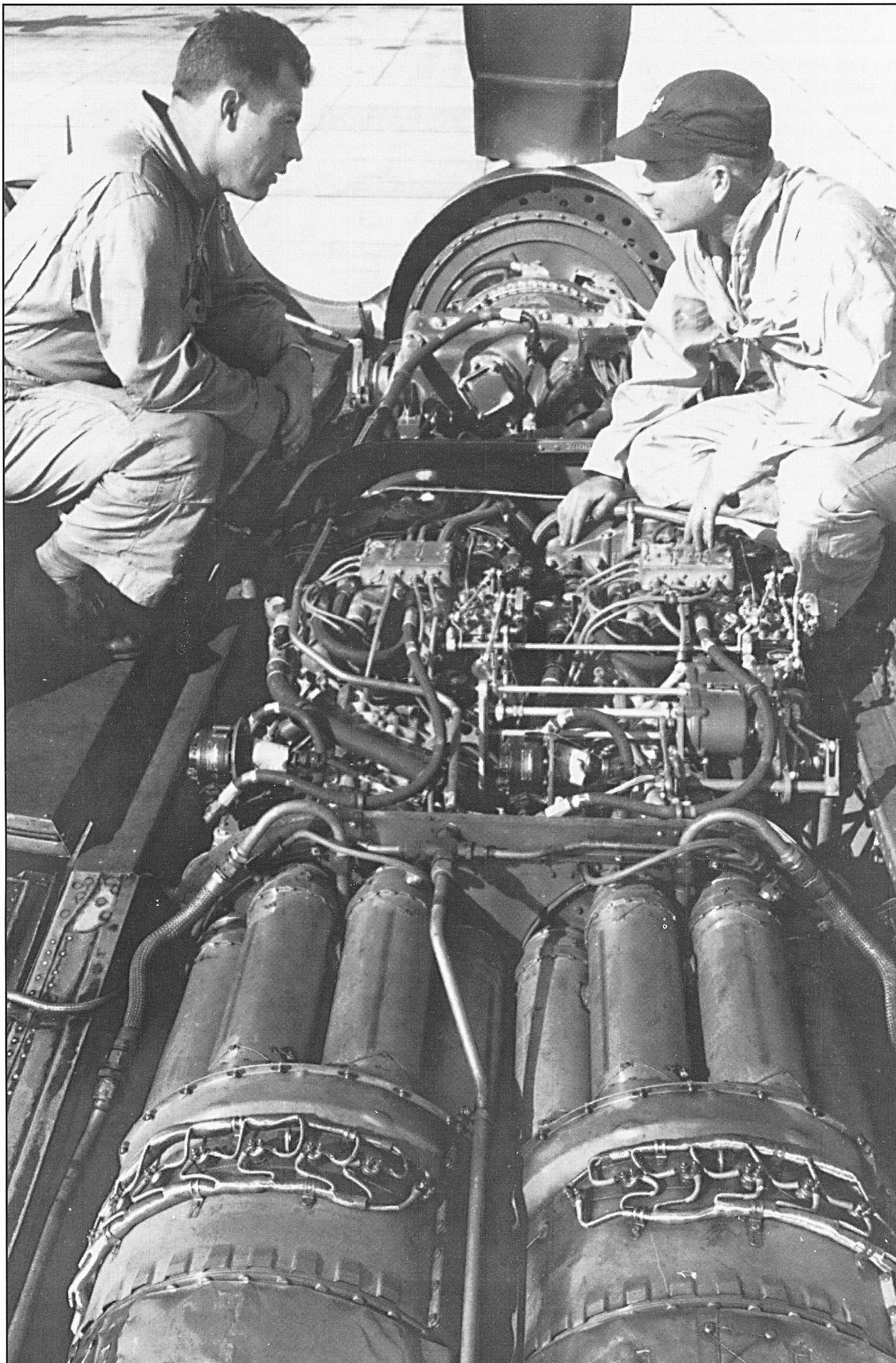


COVER-AIR, ENGINE INLET, SE0534

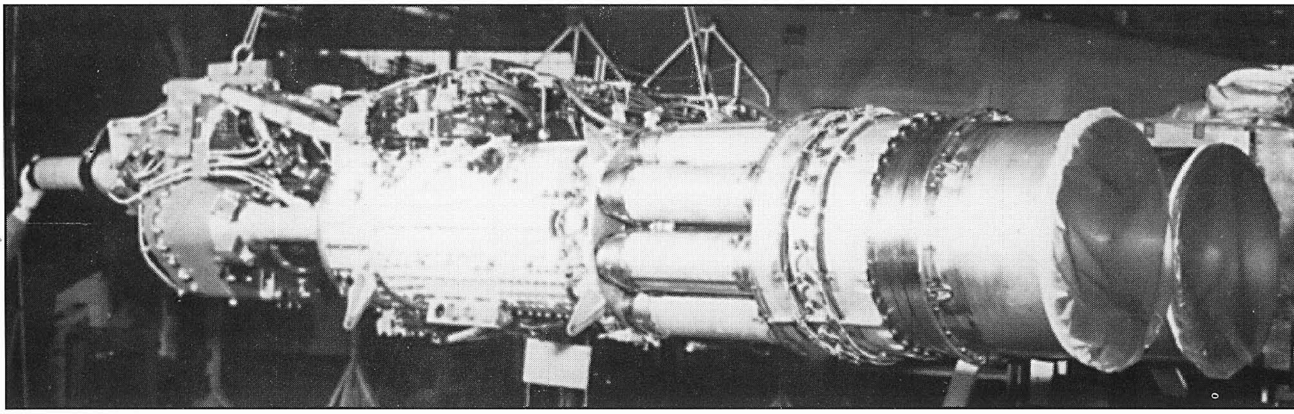


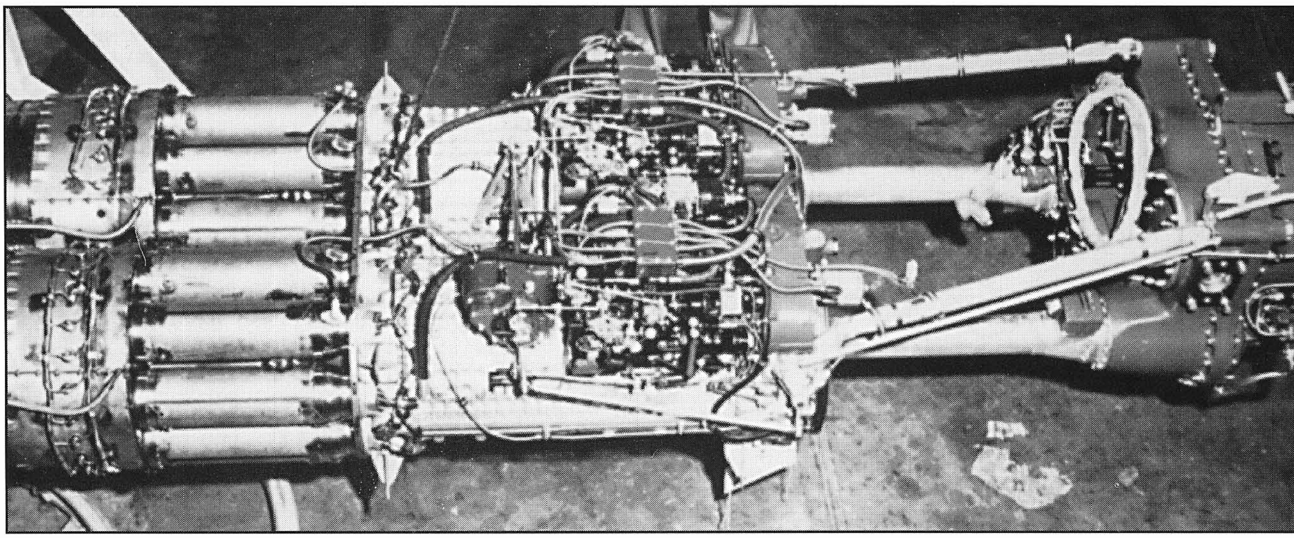
COVER-TAIL PIPE, ENGINE,

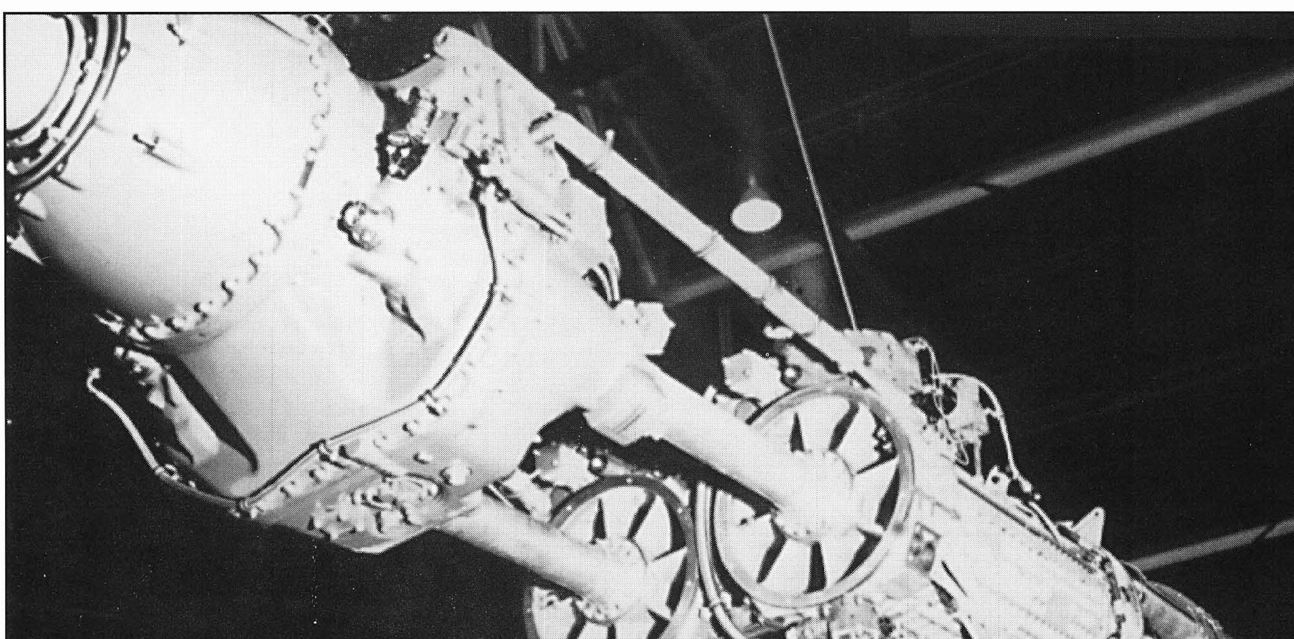




ALLISON T40-A-10 POWERPLANT







NACELLE DOORS AND FITTINGS LUBRICATION CHART

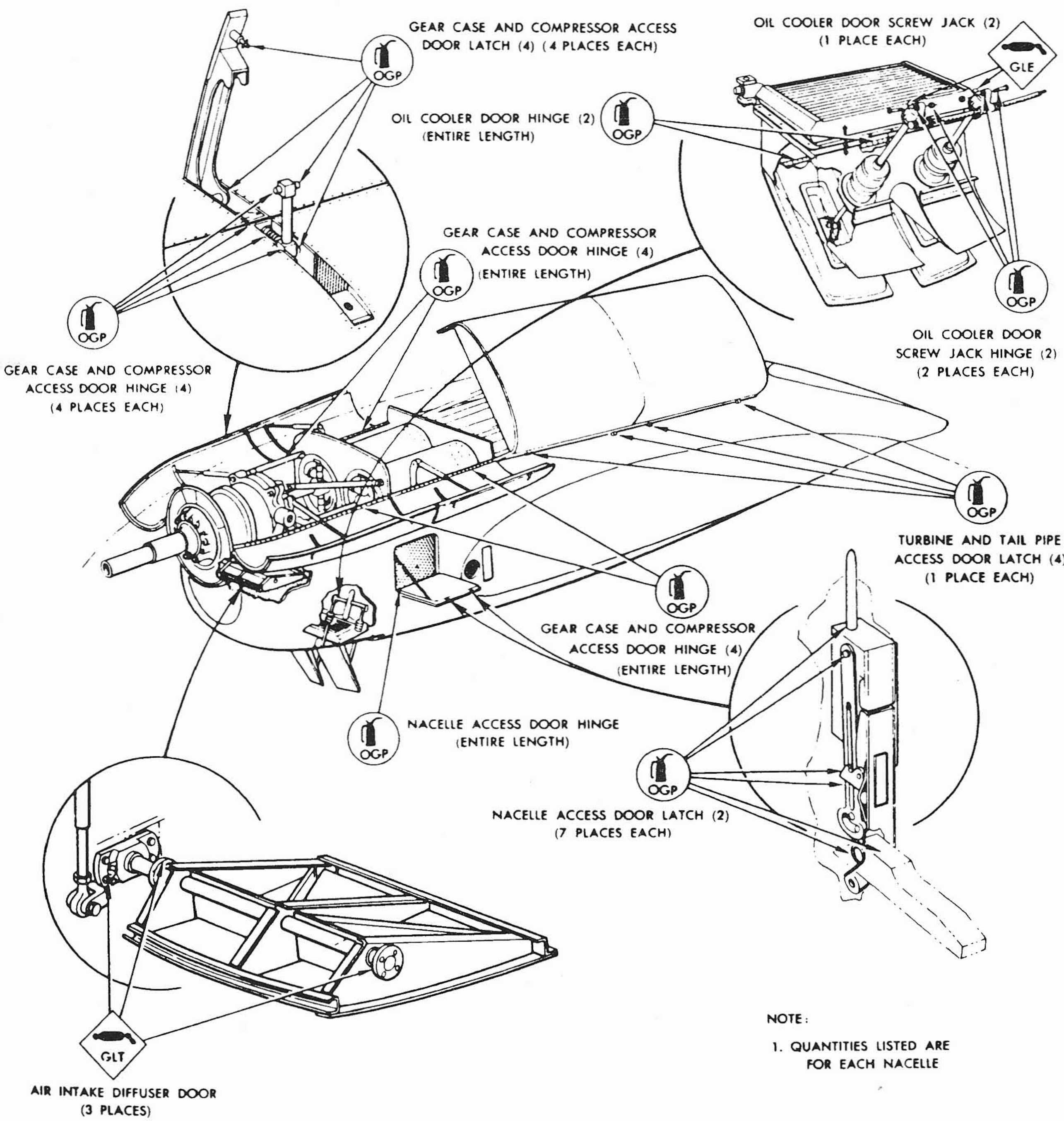
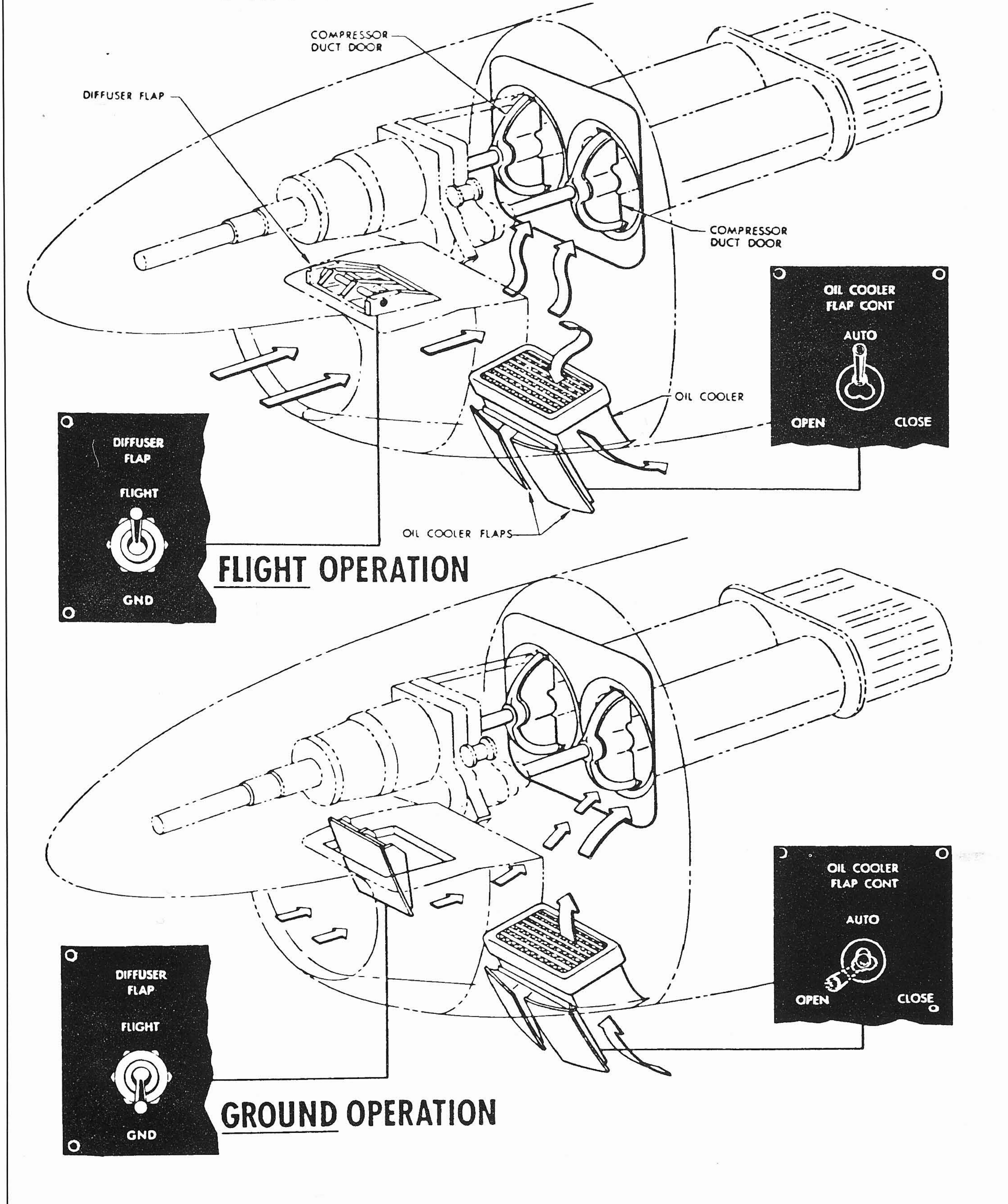


TABLE OF LUBRICANTS

IDENTIFICATION SYMBOLS		BASE SPECIFICATION	TYPE OF LUBRICANT
OGP	INTERMEDIATE	MIL-L-7870	Oil; Lubricating, General Purpose, Low Temperature.
GLT	MAJOR	MIL-G-3278	Grease; Aircraft & Instrument, High & Low Temperature
GLE	MAJOR	MIL-G-7118	Grease; Gear & Actuator Screw, High & Low Temperature.

AIR INDUCTION SYSTEM



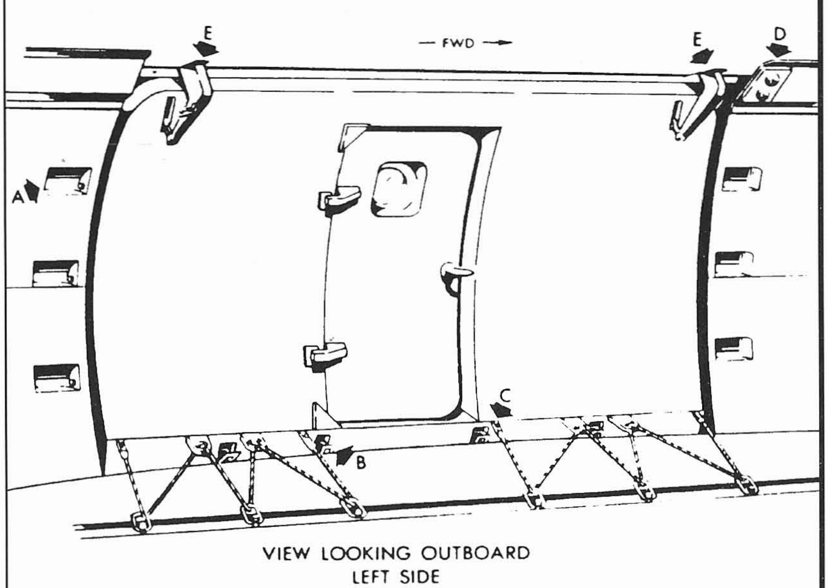
MAIN CARGO DOOR & CRANE

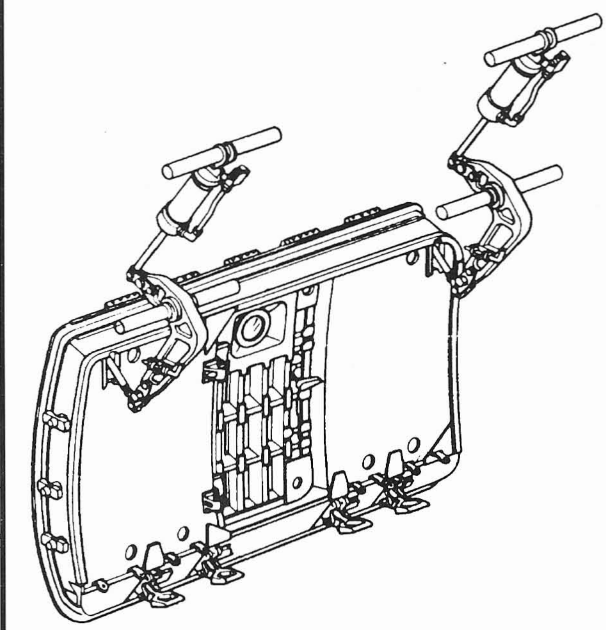
The main cargo door opened upward and outwards and measured 120 inches by 88 inches. A portable cargo loading platform, hoist and beam unit was used to handle cargo while the airplane was on the beaching cradle or in the water. Loading of cargo into barges, amphibious vehicles or landing craft is made easy by this unit. Pneumatic winches and pulley-type pogo sticks were used to move cargo in any direction. When moored at a dock or birth, heavy forklift equipment could load heavy crated items directly into the cargo bay.

At left, the portable loading platform and hoist and beam are being installed. Below, the hoist and beam are being used to off-load large oversized crates from an R3Y-1. (via Craig Kaston)

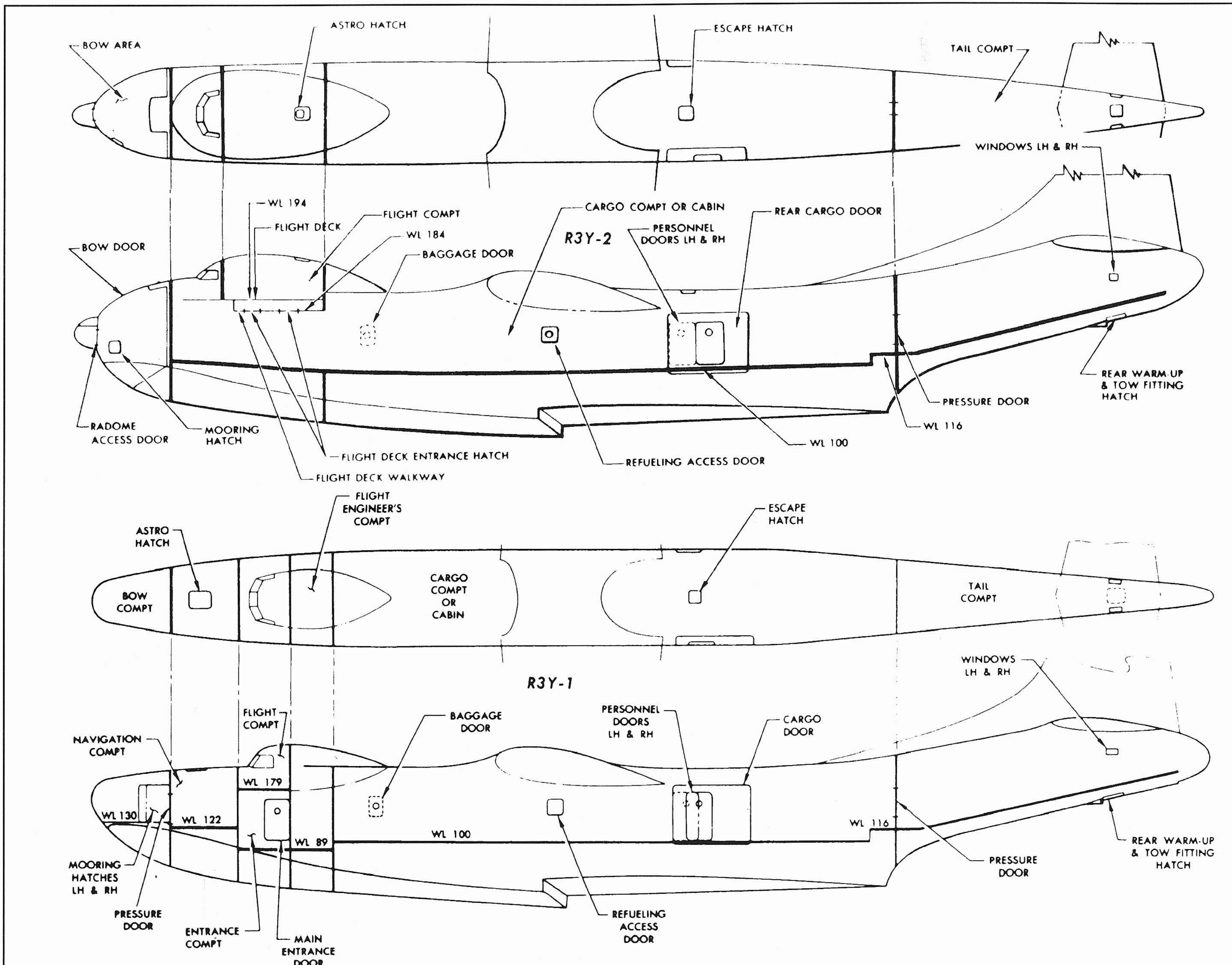
Below right, heavy cargo is being loaded by forklift on a docked R3Y-1. (SDAM)

MAIN CARGO DOOR DETAILS

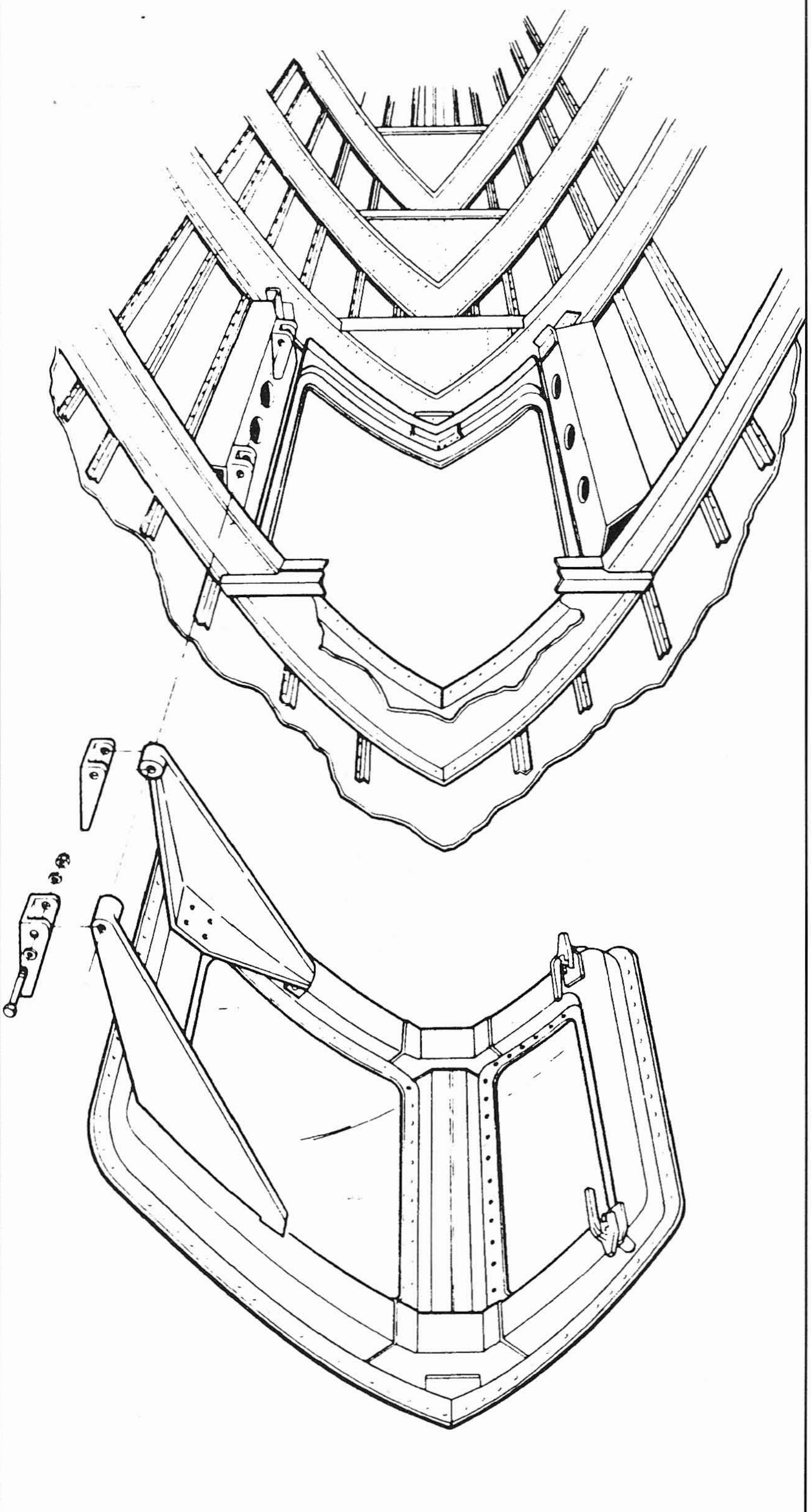




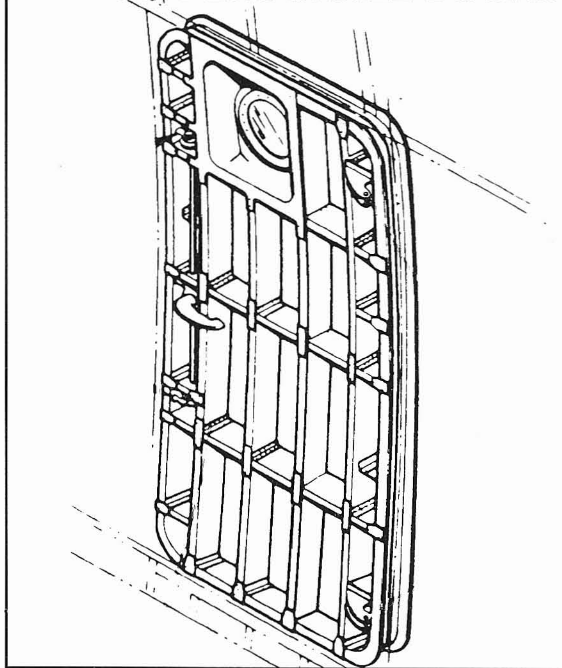
CARGO DOORS, ESCAPE HATCHES AND HULL COMPARTMENTS



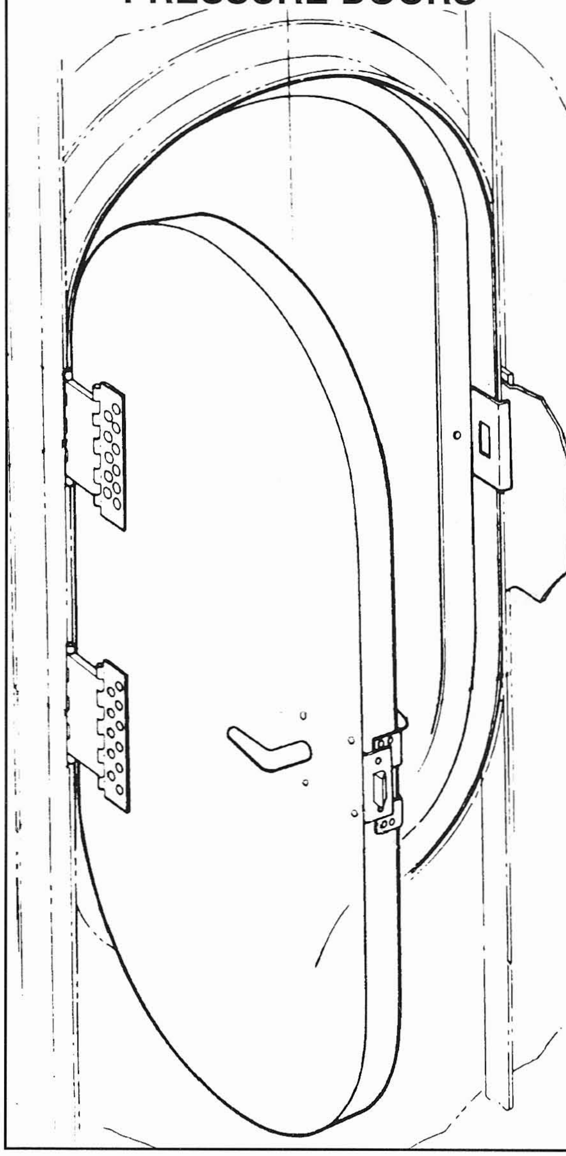
REAR WARM-UP & TOW FITTING HATCH



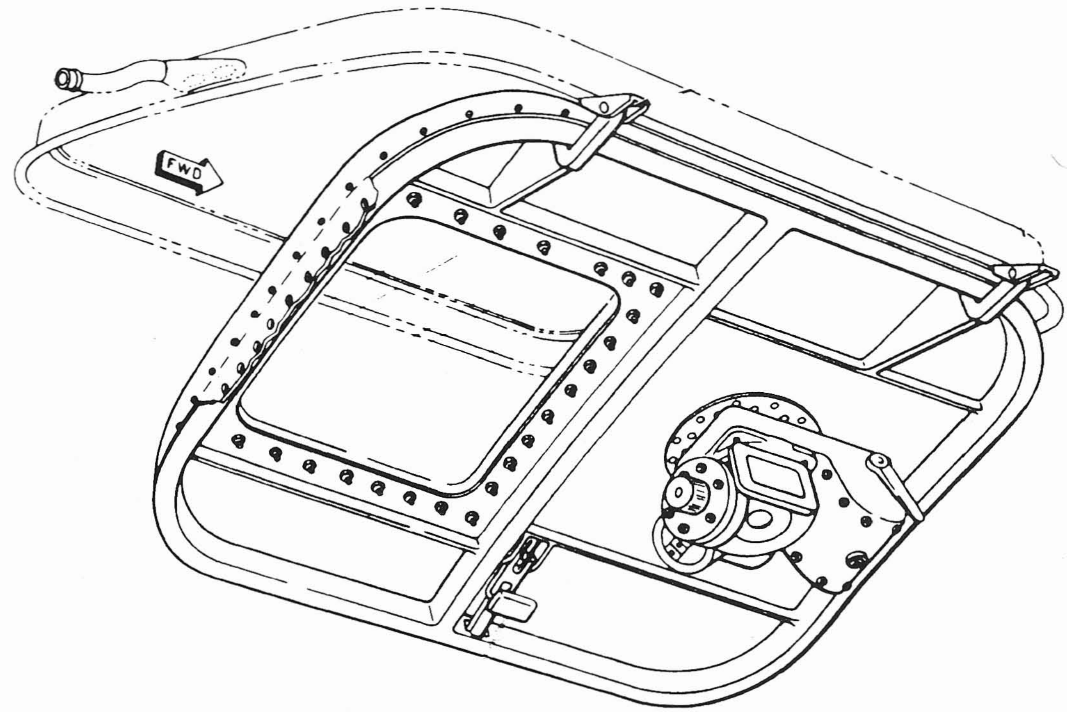
PERSONNEL DOORS



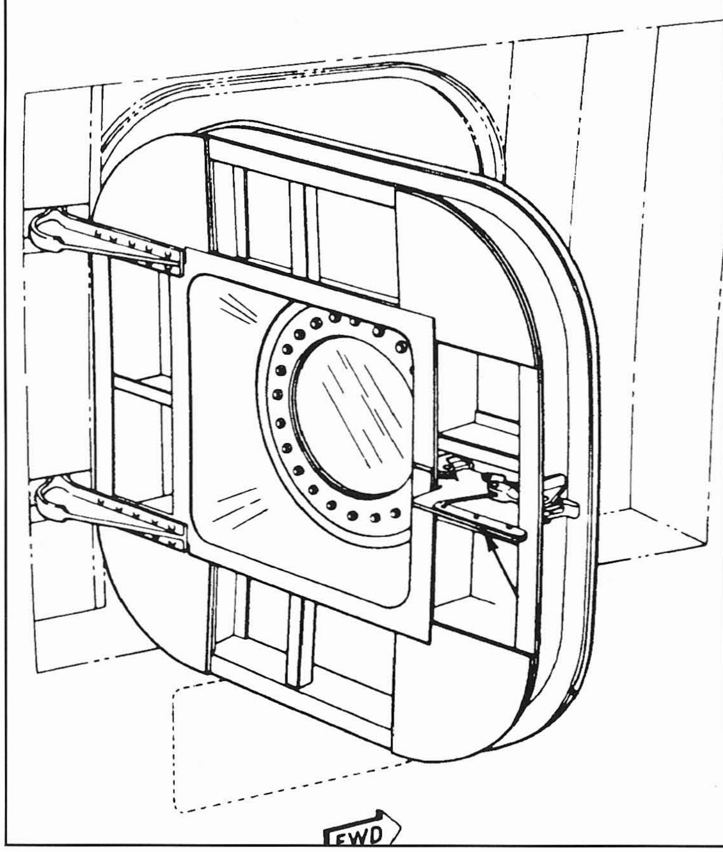
PRESSURE DOORS



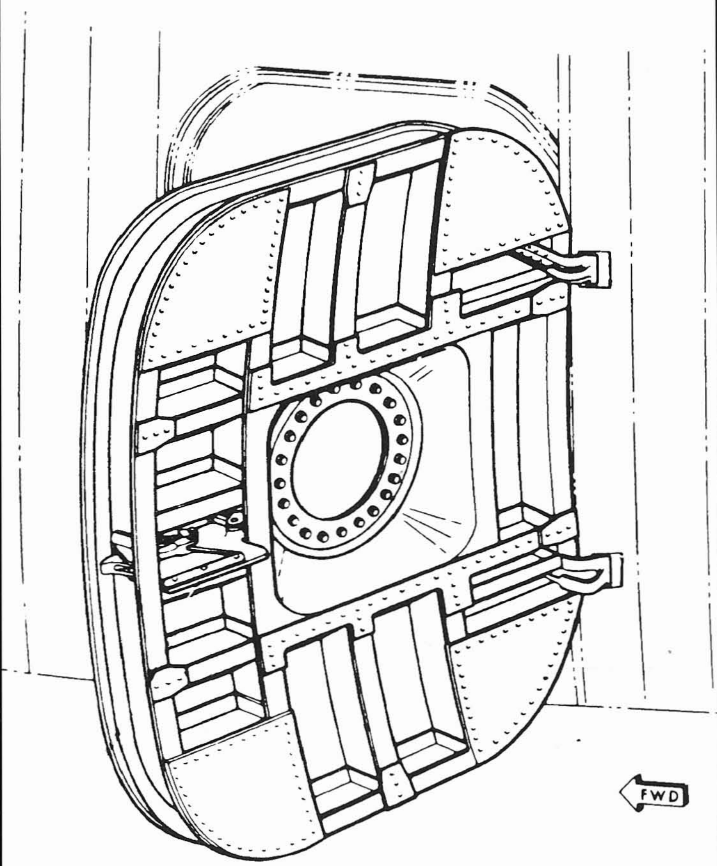
NAVIGATOR'S ASTRO HATCH



REFUELING ACCESS DOOR



BAGGAGE DOOR



BAGGAGE DOOR

MOORING HATCH R3Y-1 ONLY

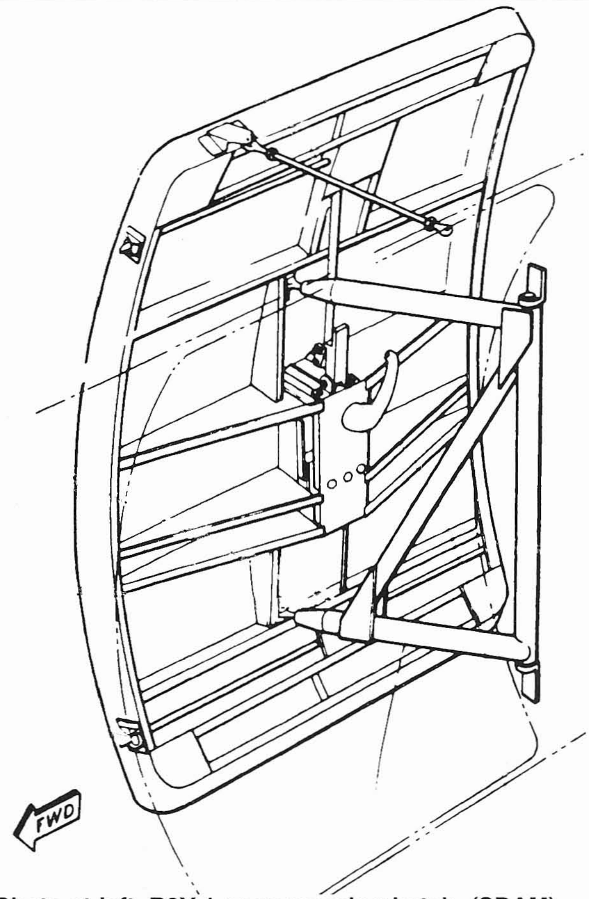
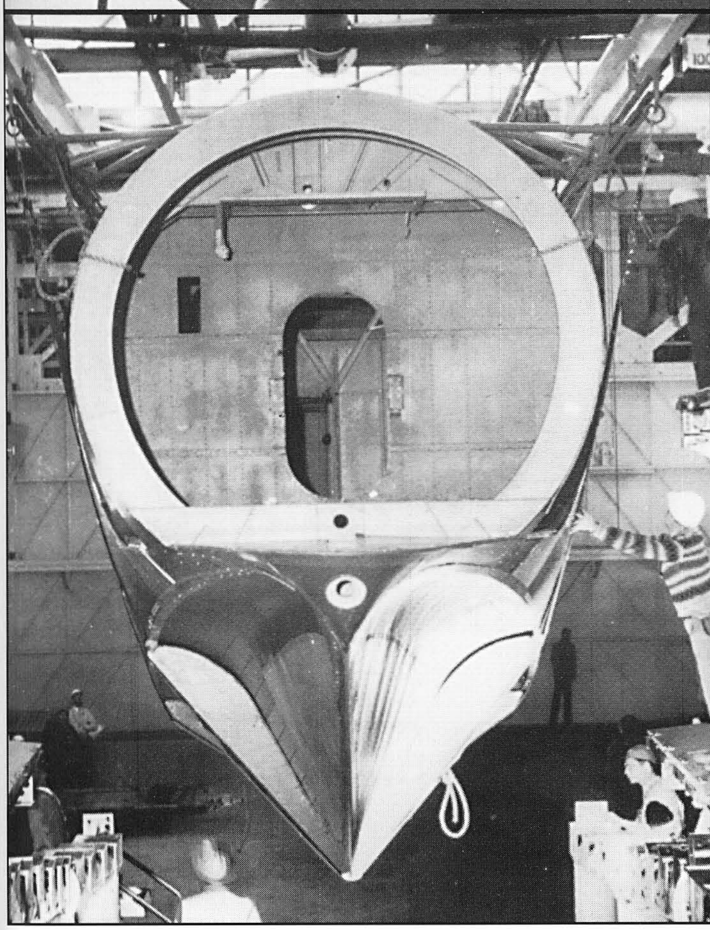


Photo at left, R3Y-1 open mooring hatch. (SDAM)



R3Y-1 MAIN ENTRANCE DOOR

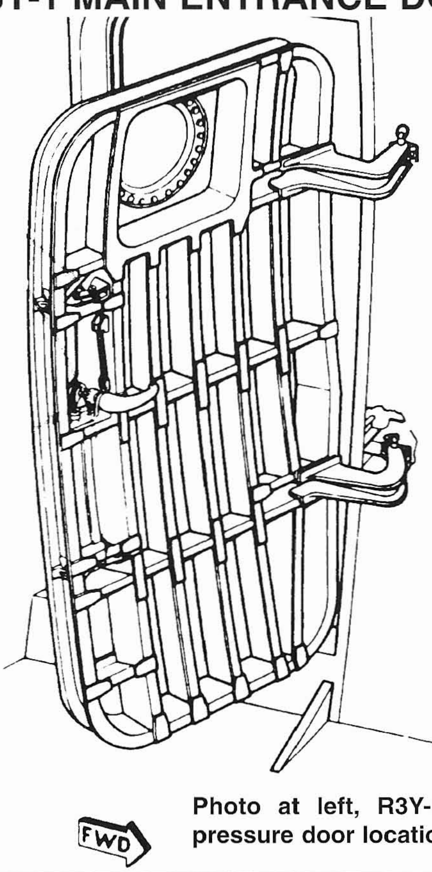
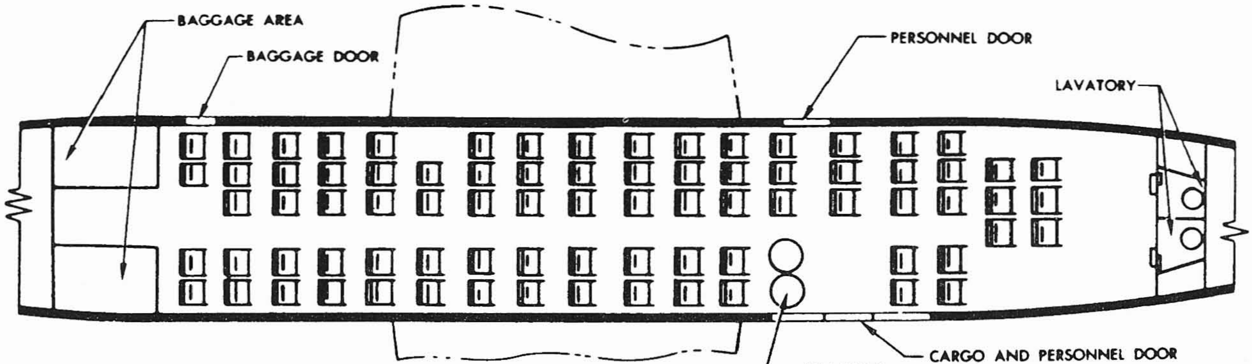
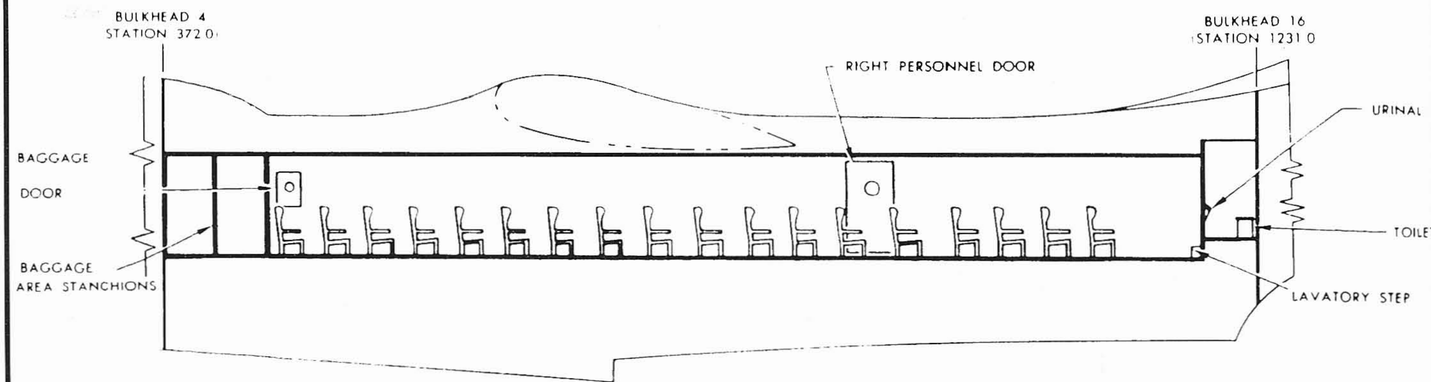


Photo at left, R3Y-1 forward pressure door location.

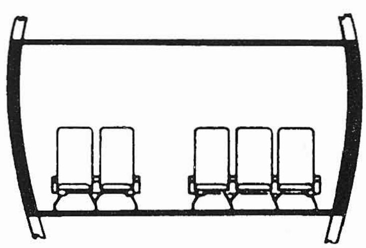
R3Y-1 INTERIOR ARRANGEMENT



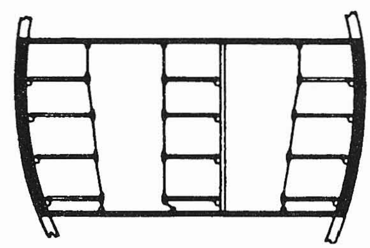
80 SEAT PASSENGER ARRANGEMENT



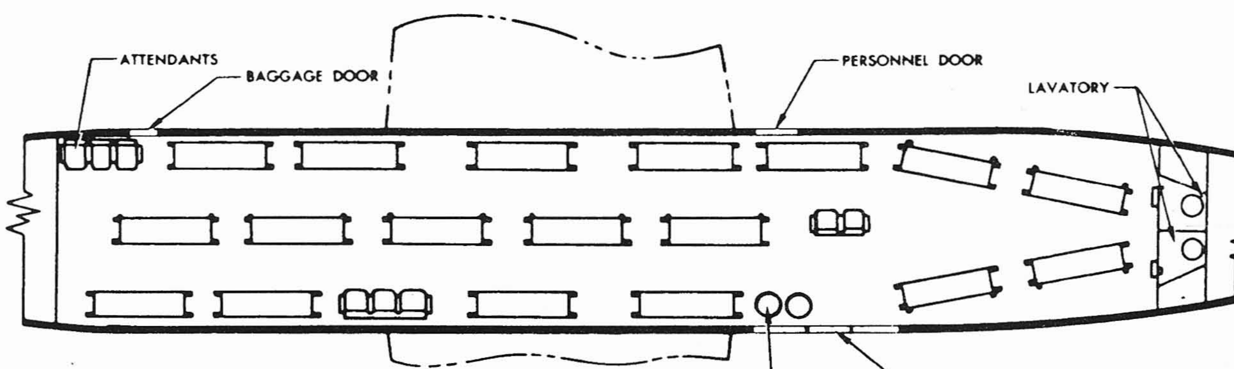
PERSONNEL SEAT ARRANGEMENT R3Y-1



PASSENGER ARRANGEMENT
VIEW LOOKING FORWARD

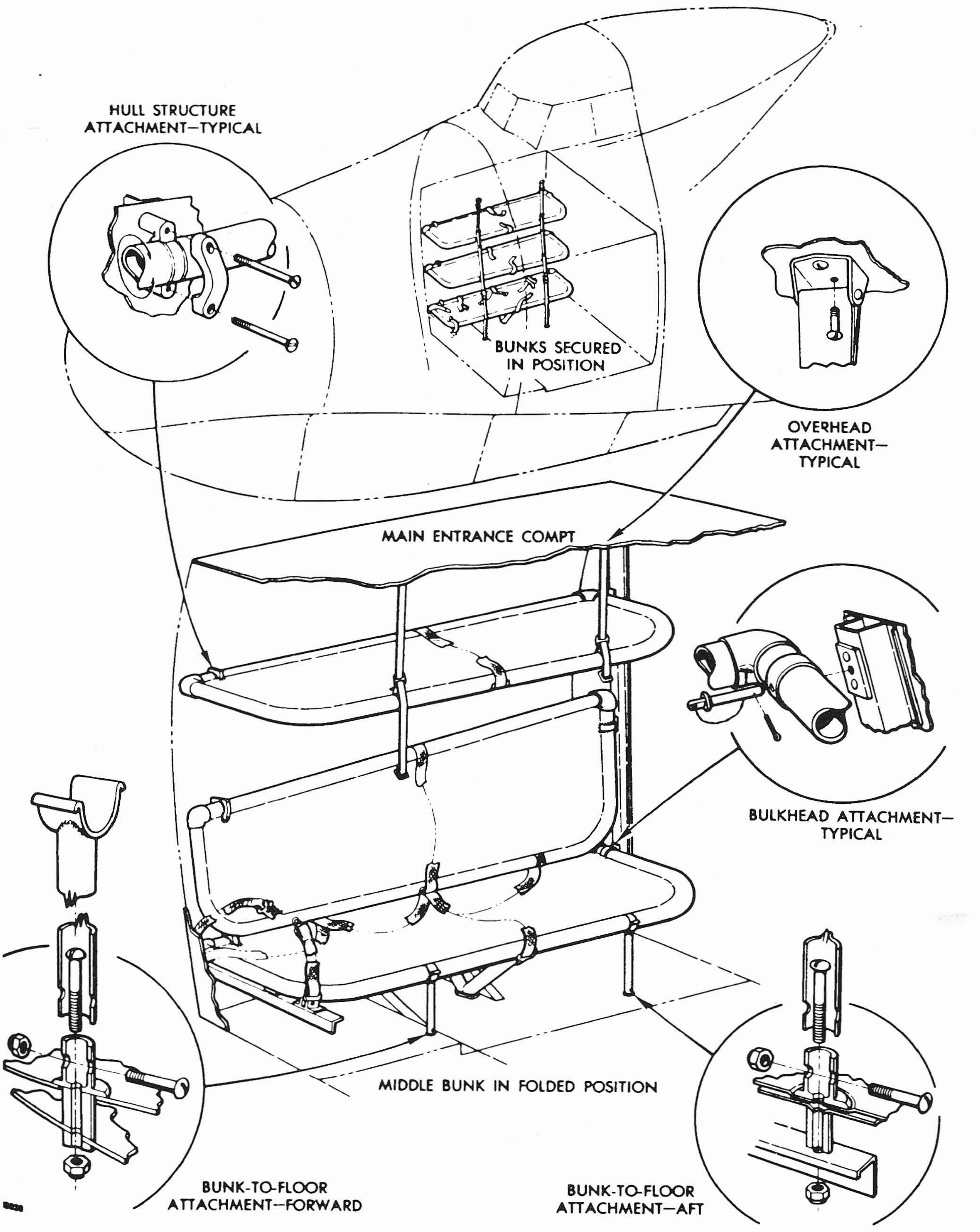


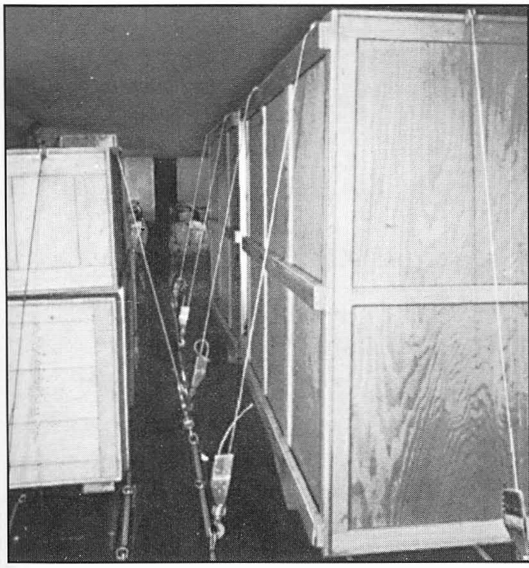
LITTER ARRANGEMENT
VIEW LOOKING FORWARD

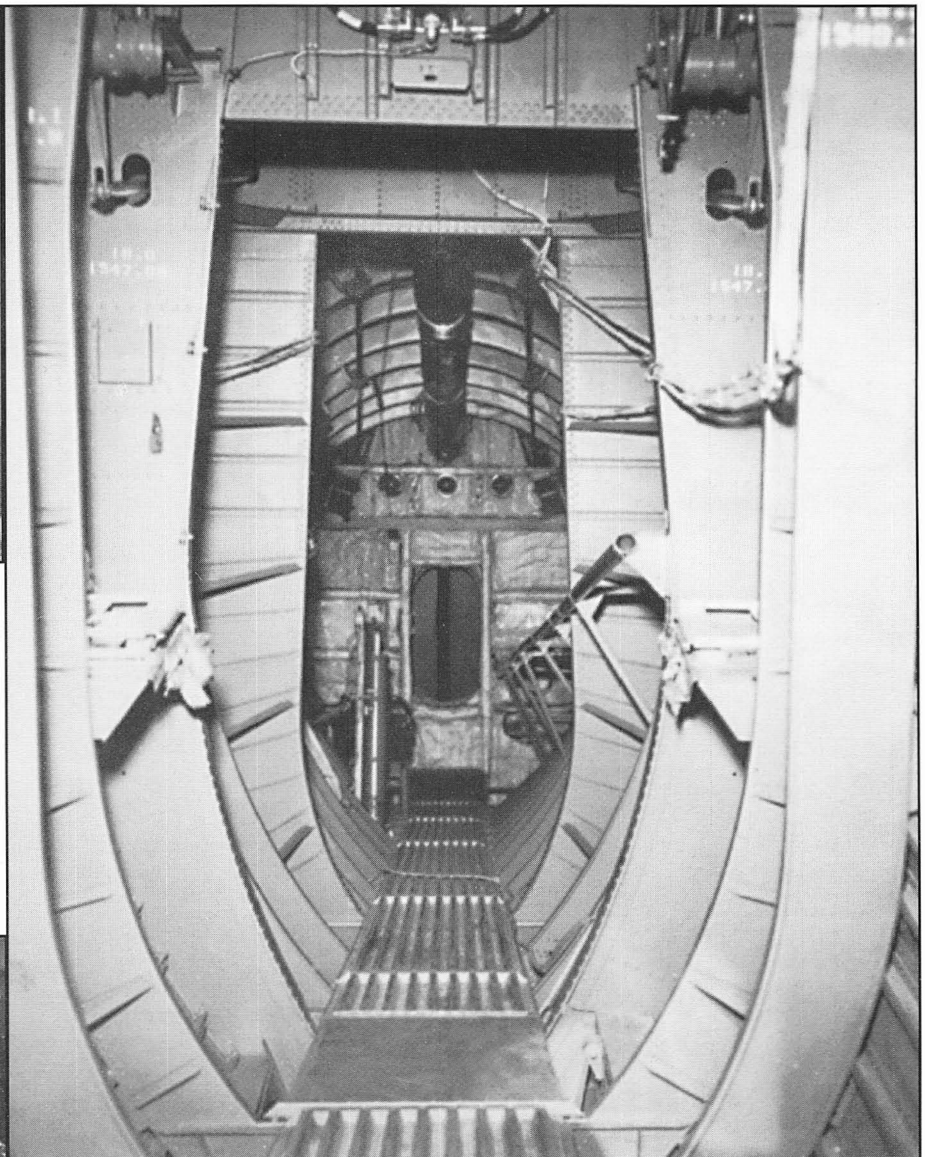


72 LITTERS AND 8 ATTENDANTS

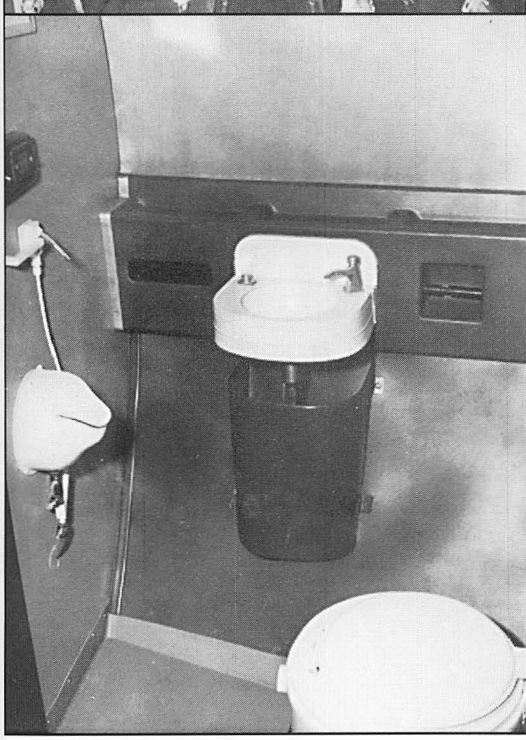
R3Y-1 CREW BUNK INSTALLATION

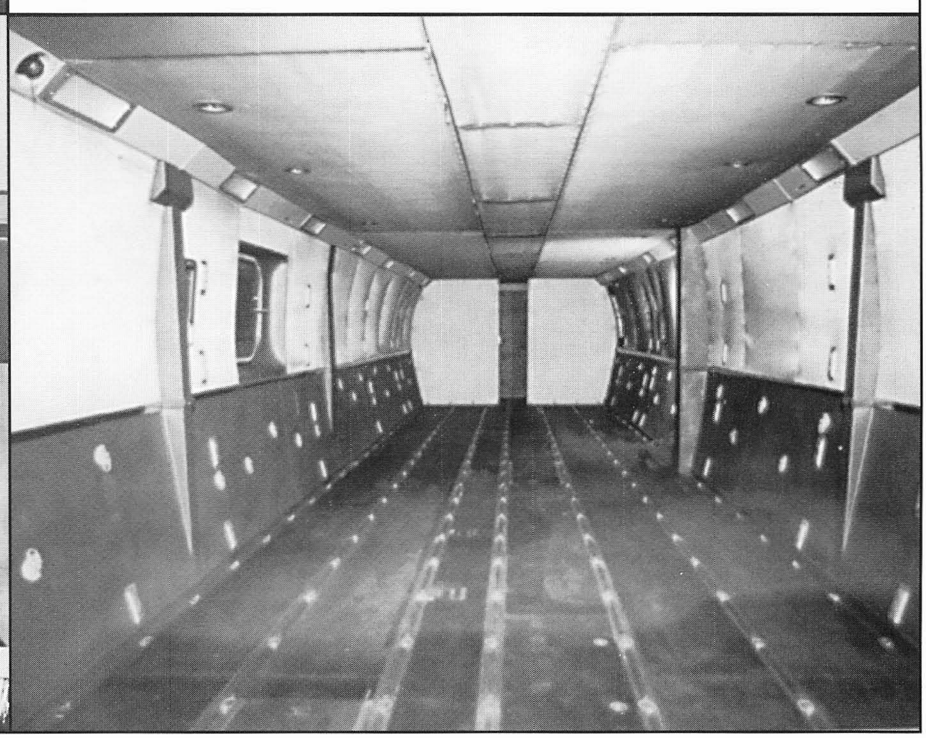




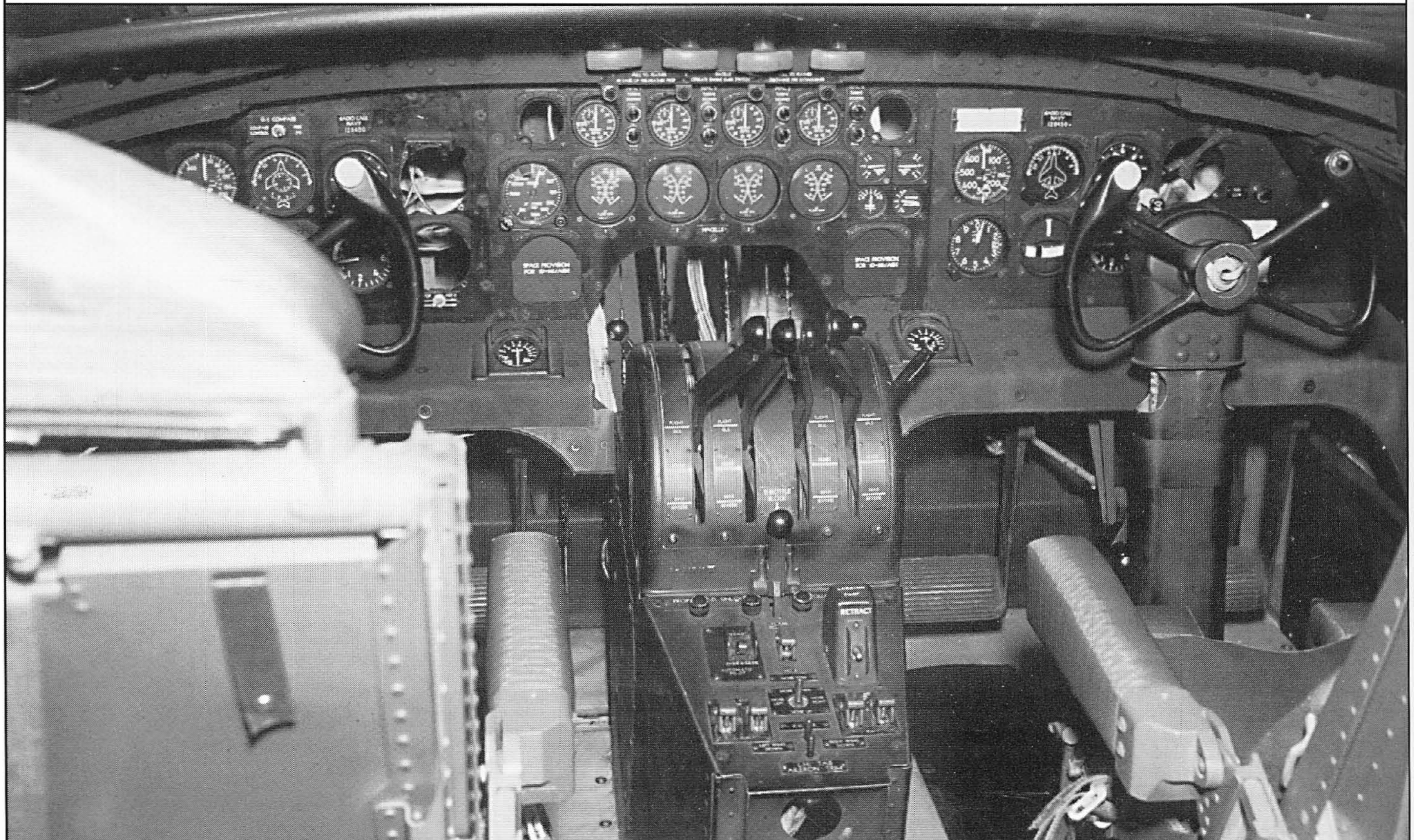


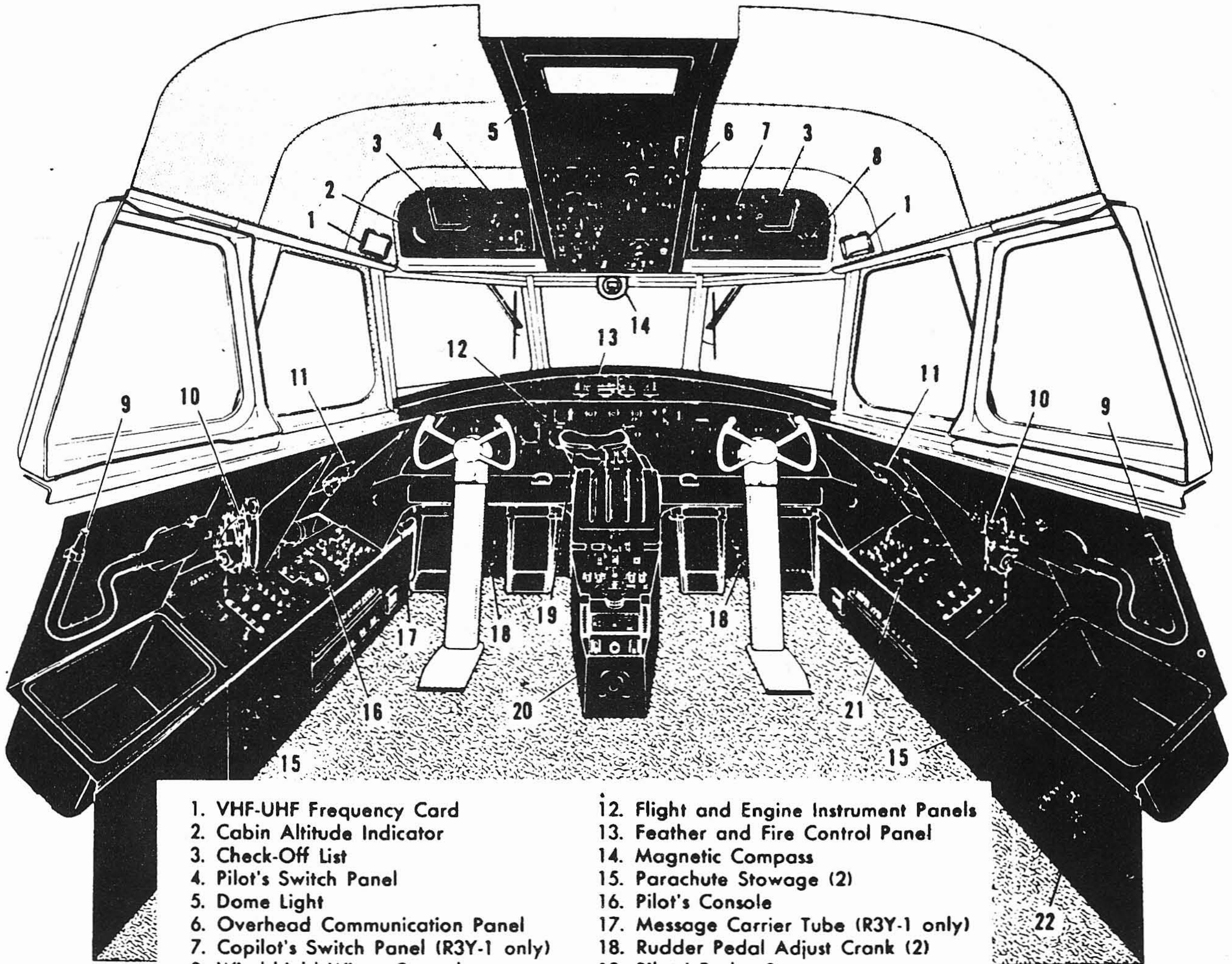
Above, large crated freight installed in an R3Y-1. (via Kaston)
At left top, R3Y-1 with passenger seats installed. (via Kaston)
At right, interior hull structure from the extreme tail looking forward to the pressure door. (SDAM)
Bottom right, empty R3Y cargo hold.
Bottom, Tradewind washroom (The Head).
At left bottom, cargo area with litters installed. (SDAM)



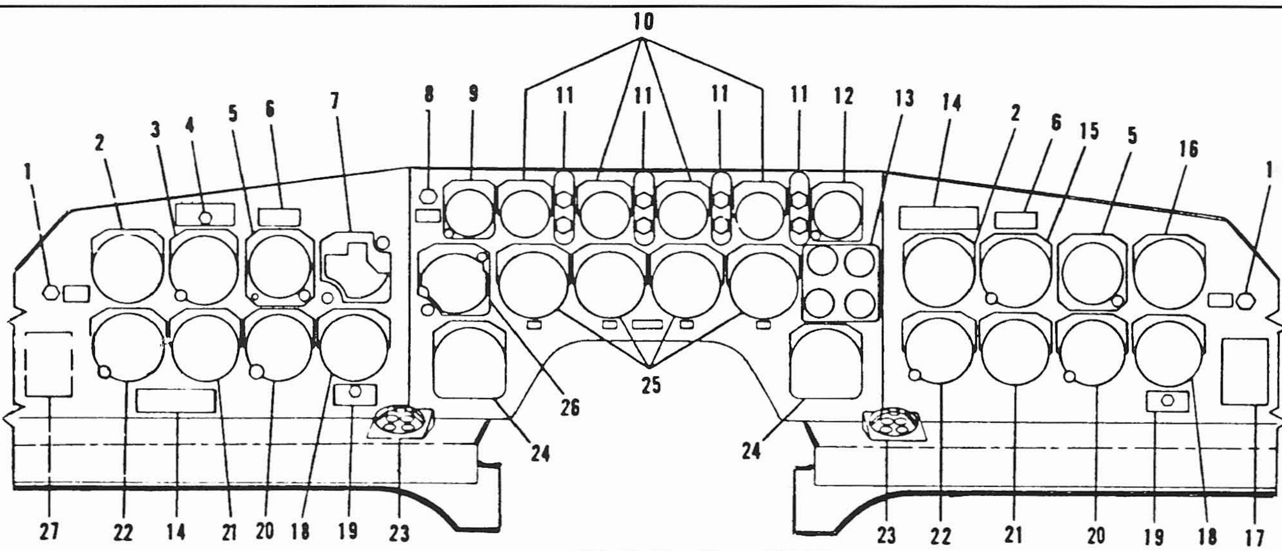


PILOT'S AND CO-PILOT'S INSTRUMENT PANEL



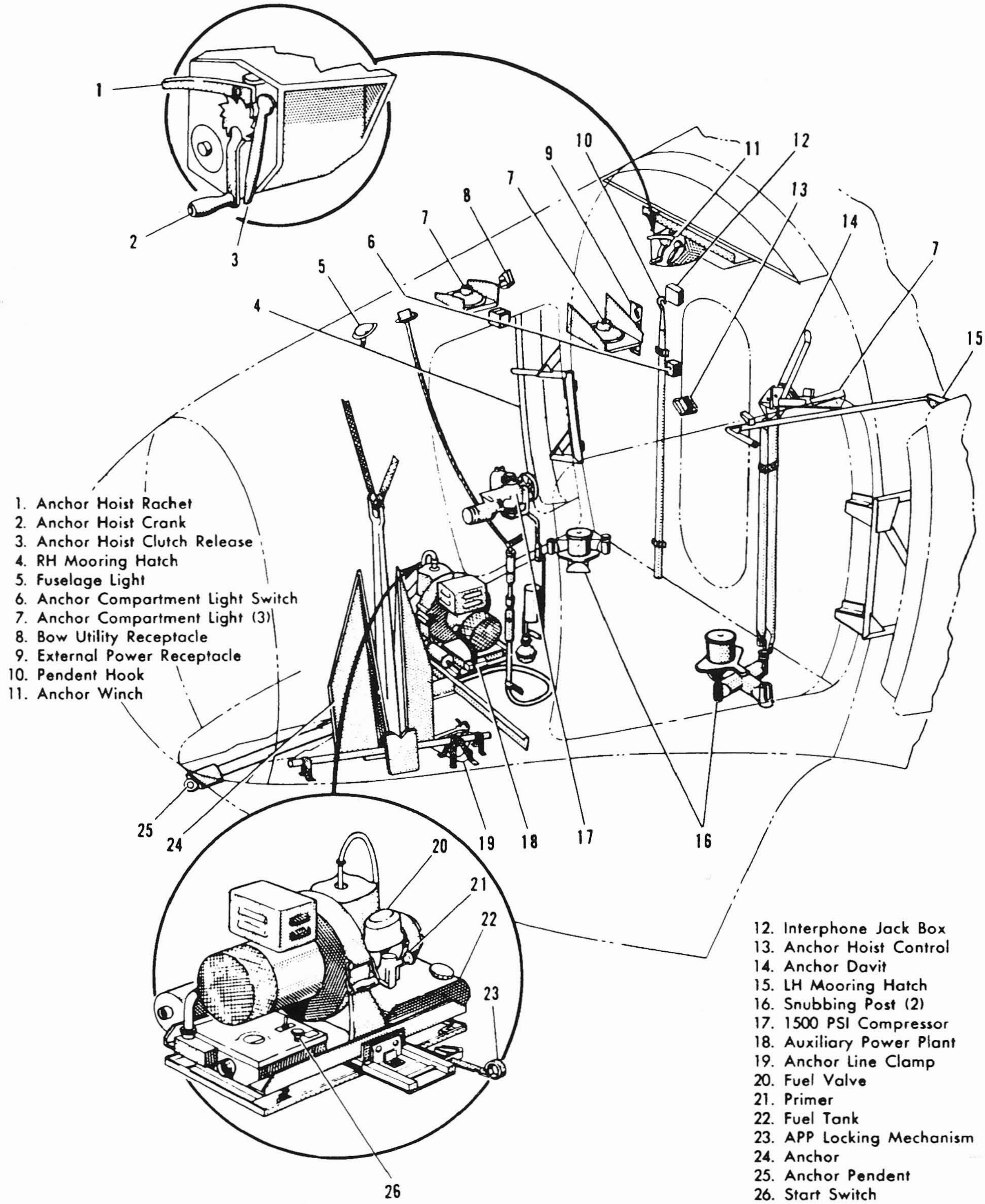


1. VHF-UHF Frequency Card
2. Cabin Altitude Indicator
3. Check-Off List
4. Pilot's Switch Panel
5. Dome Light
6. Overhead Communication Panel
7. Copilot's Switch Panel (R3Y-1 only)
8. Windshield Wiper Control
9. Elbow Warmer (2)
10. Headset and Microphone
11. Side Window Crank (2)
12. Flight and Engine Instrument Panels
13. Feather and Fire Control Panel
14. Magnetic Compass
15. Parachute Stowage (2)
16. Pilot's Console
17. Message Carrier Tube (R3Y-1 only)
18. Rudder Pedal Adjust Crank (2)
19. Pilots' Radar Scope
20. Pilots' Pedestal
21. Copilot's Console
22. Spare Bulb Stowage



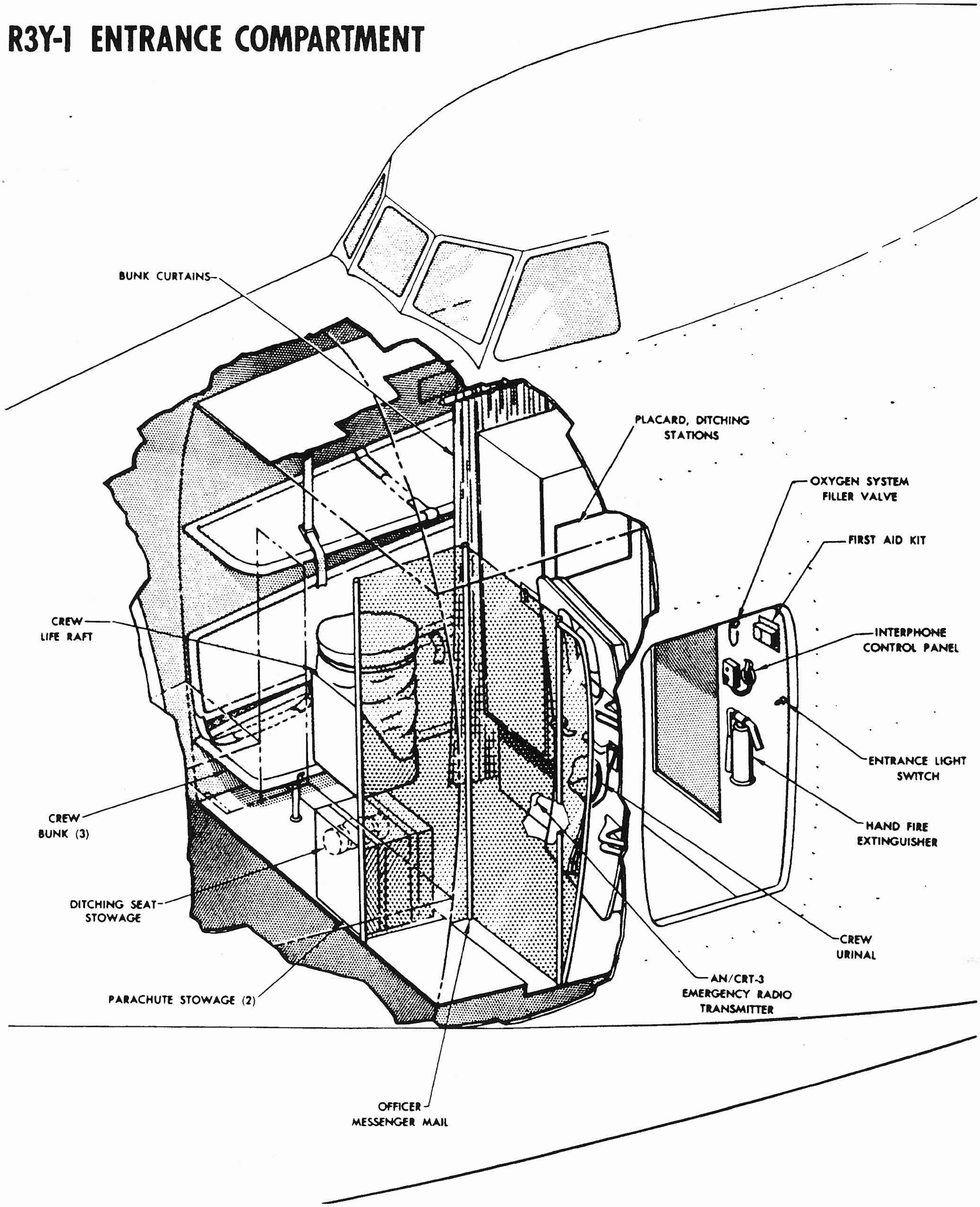
1.) Fuel Low Level Warning Light.
2.) Airspeed Indicator.
3.) G-2 Compass.
4.) G-2 Compass Switch.
5.) Gyro Horizon Indicator.
6.) Radio Call Nameplate.
7.) Course Indicator (ID-249).
8.) Below Altitude Light.
9.) Standard Clock.
10.) Engine Tachometer.
11.) Turbine Stopped Light.
12.) Elapsed Time Clock.
13.) Trim Tab Indicators.
14.) Airspeed Correction Card.
15.) A-12 Master Compass.
16.) deviation Indicator.
17.) A-12 Corr. Card.
18.) Course Ind. (ADF).
19.) VOR-ADF-1 Switch.
20.) Rate-of-Climb Ind.
21.) Turn & Bank Ind.
22.) Altimeter.
23.) Flap Position Ind.
24.) Space Provisions.
25.) Eng. Torquemeter.
26.) ID-14 or ID-257.
27.) G-2 Correc. Card.

R3Y-1 BOW COMPARTMENT

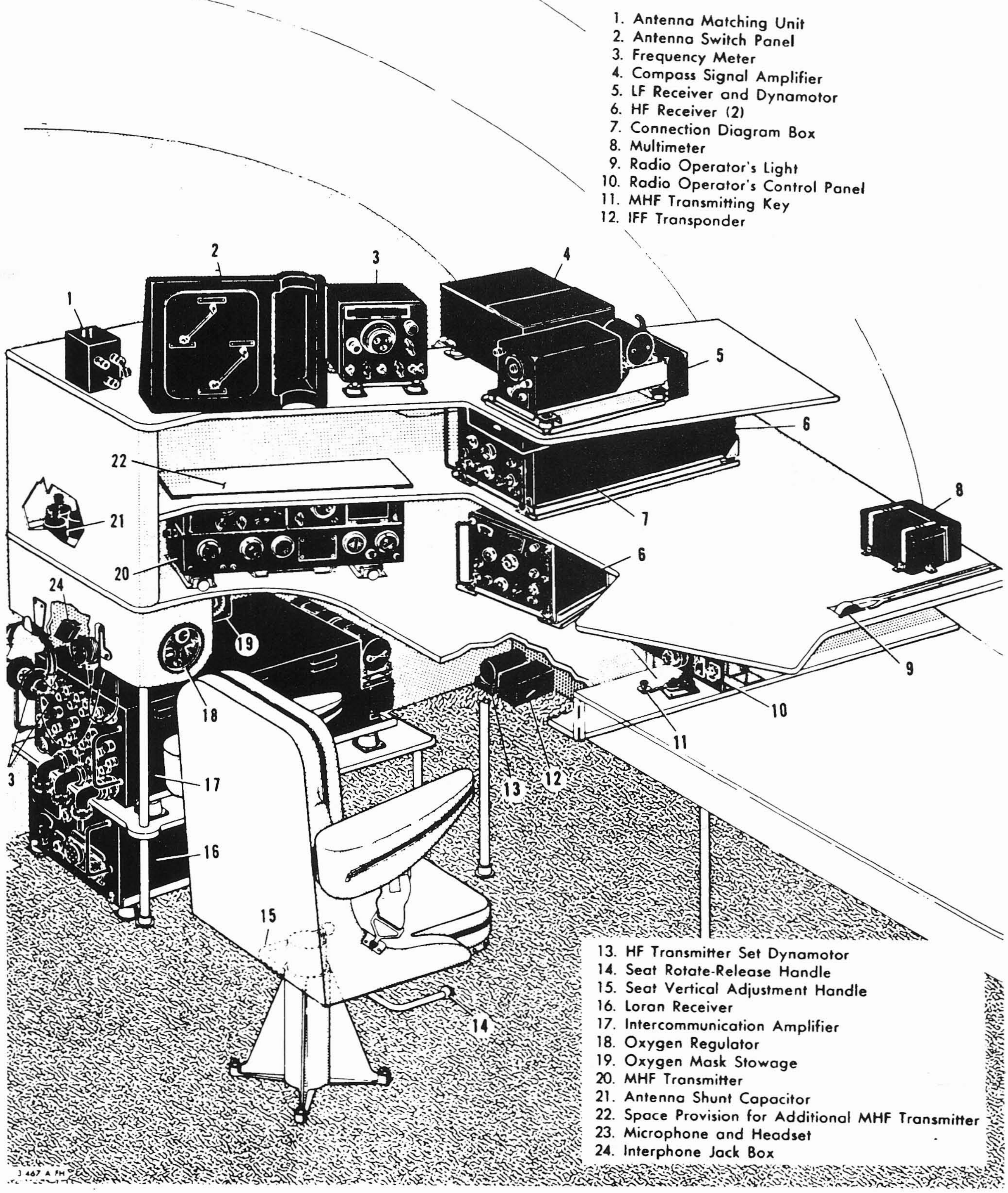


1. Anchor Hoist Rachet
2. Anchor Hoist Crank
3. Anchor Hoist Clutch Release
4. RH Mooring Hatch
5. Fuselage Light
6. Anchor Compartment Light Switch
7. Anchor Compartment Light (3)
8. Bow Utility Receptacle
9. External Power Receptacle
10. Pendent Hook
11. Anchor Winch
12. Interphone Jack Box
13. Anchor Hoist Control
14. Anchor Davit
15. LH Mooring Hatch
16. Snubbing Post (2)
17. 1500 PSI Compressor
18. Auxiliary Power Plant
19. Anchor Line Clamp
20. Fuel Valve
21. Primer
22. Fuel Tank
23. APP Locking Mechanism
24. Anchor
25. Anchor Pendent
26. Start Switch

R3Y-1 ENTRANCE COMPARTMENT



R3Y-1 RADIO OPERATOR'S STATION



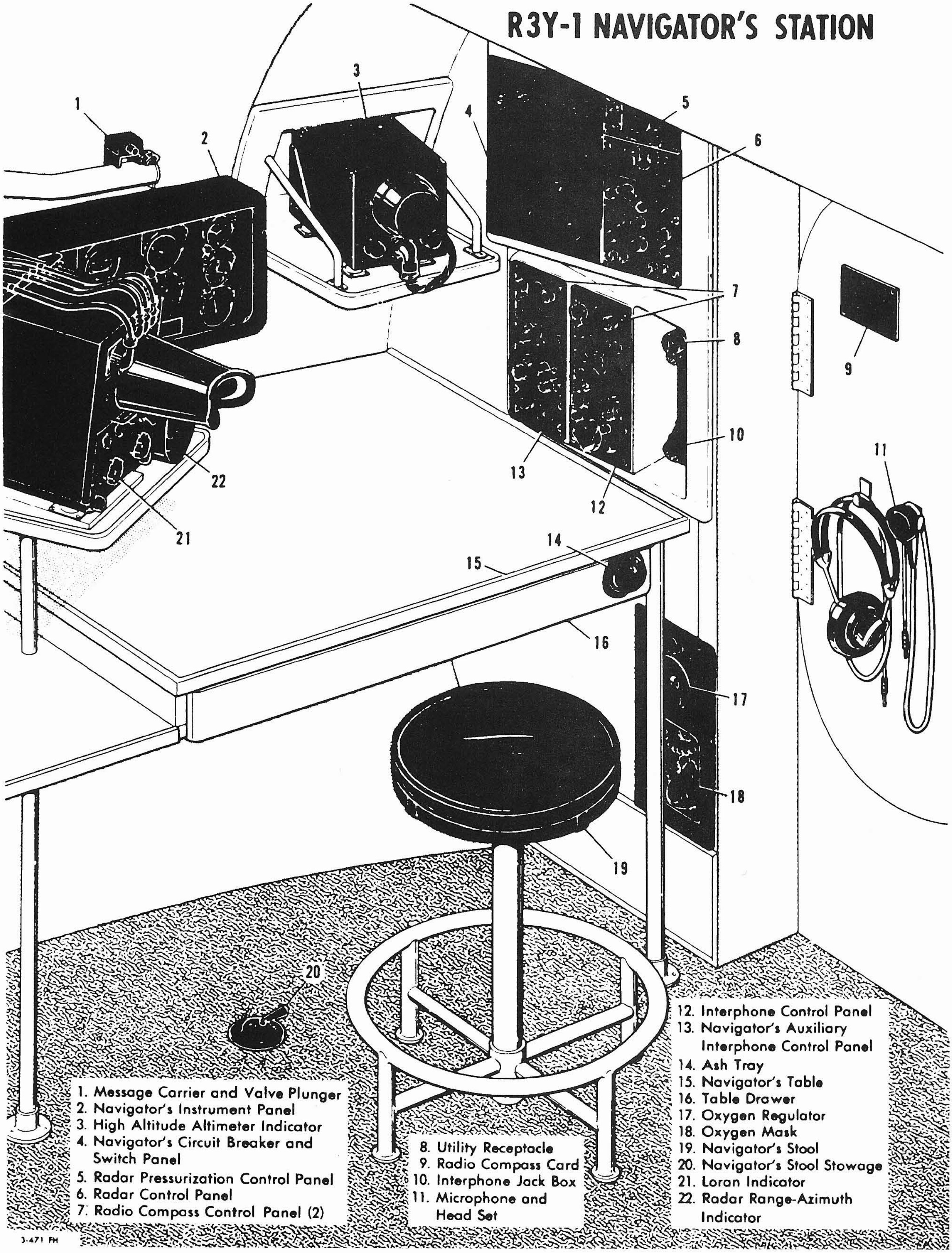
R3Y-1 RADIO AND NAVIGATION COMPARTMENT

The Radio and Navigation compartment is situated below the flightdeck on the pilot's side of the fuselage, with the navigation station in front and the radio station and gear in the aft end of the compartment. The two stations are joined by a common table.

At right, the navigation station looking forward. (via Kaston)

Below, the upper portion of the radio station facing aft. The complete layout is shown on the illustration on page 70. (via Kaston)

R3Y-1 NAVIGATOR'S STATION

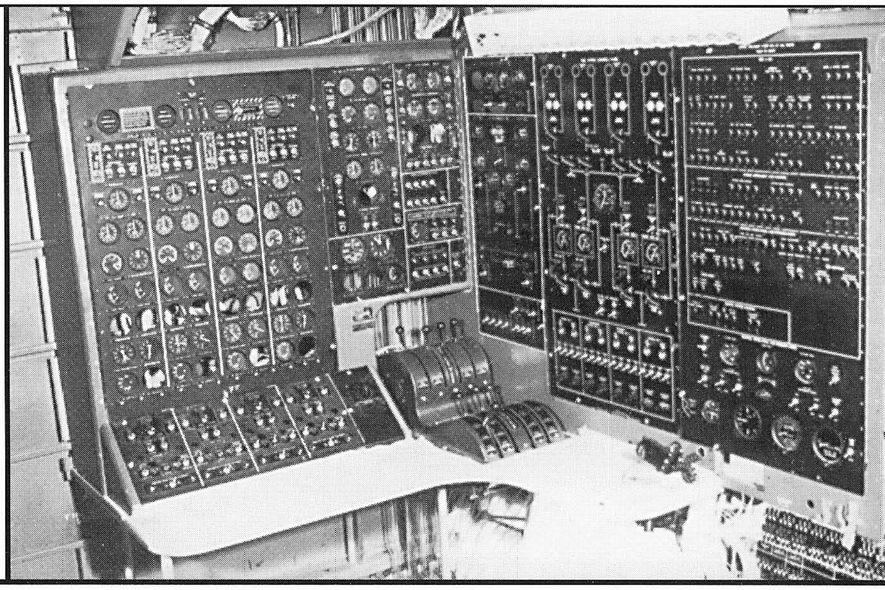


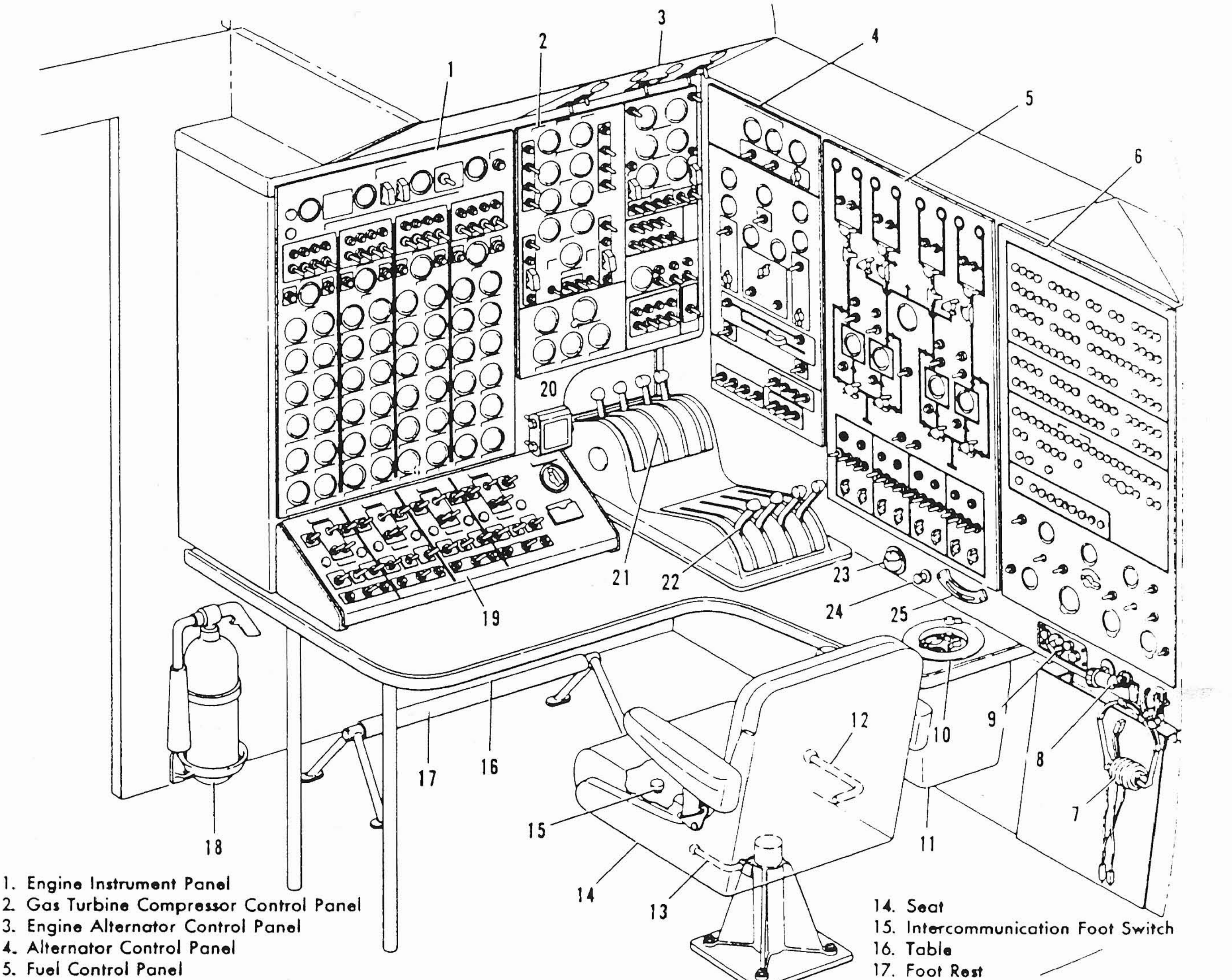
1. Message Carrier and Valve Plunger
2. Navigator's Instrument Panel
3. High Altitude Altimeter Indicator
4. Navigator's Circuit Breaker and Switch Panel
5. Radar Pressurization Control Panel
6. Radar Control Panel
7. Radio Compass Control Panel (2)
8. Utility Receptacle
9. Radio Compass Card
10. Interphone Jack Box
11. Microphone and Head Set
12. Interphone Control Panel
13. Navigator's Auxiliary Interphone Control Panel
14. Ash Tray
15. Navigator's Table
16. Table Drawer
17. Oxygen Regulator
18. Oxygen Mask
19. Navigator's Stool
20. Navigator's Stool Stowage
21. Loran Indicator
22. Radar Range-Azimuth Indicator

R3Y-1 FLIGHT ENGINEER'S STATION

The R3Y-1 Flight Engineer Station differed from the R3Y-2 Flight Engineer Station in having vertical fuselage side instrument panels. The engineer's position was situated at a lower level in the fuselage on the R3Y-1, therefore the instrument panels did not have to be fitted around the curvature of the fuselage as they did on the R3Y-2.

At right, R3Y-1 Flight Engineer Station overall view. (National Archives)





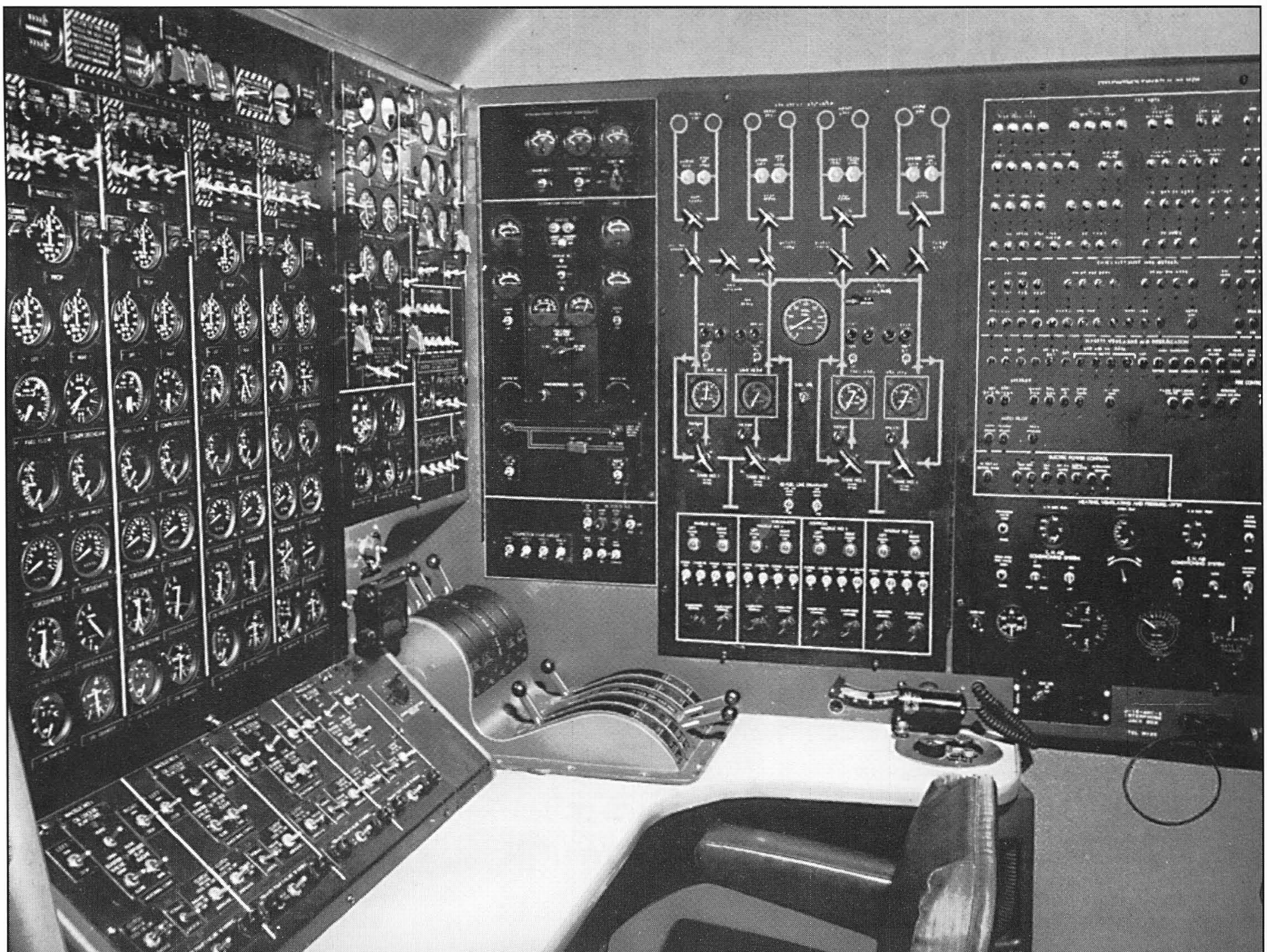
1. Engine Instrument Panel
2. Gas Turbine Compressor Control Panel
3. Engine Alternator Control Panel
4. Alternator Control Panel
5. Fuel Control Panel
6. Circuit Breaker Panel
7. Headset
8. Utility Light
9. Interphone Control Panel
10. Oxygen Regulator
11. Oxygen Mask Stowage
12. Rotate-Release Handle
13. Vertical Seat Adjustment Handle
14. Seat
15. Intercommunication Foot Switch
16. Table
17. Foot Rest
18. Fire Extinguisher
19. Console Switch Panel (Ref Fig. 5-31)
20. Check List
21. Regime (Feather) Control Levers
22. Power Control Levers
23. Ash Tray
24. Cigar Lighter
25. Inclinometer

R3Y-1 FLIGHT ENGINEER'S STATION

R3Y-1 FLIGHT ENGINEER STATION

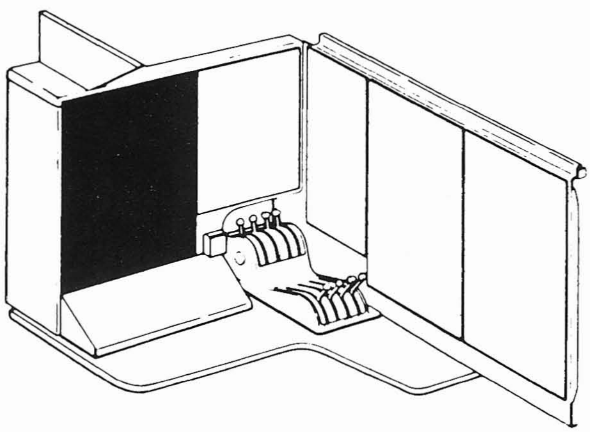
At left, the flight engineer watches the heart and soul of the Tradewind, the engine instrument panel. Each vertical row of gages is for one engine and each vertical white line separates each of the coupled engines from the other three. (SDAM)

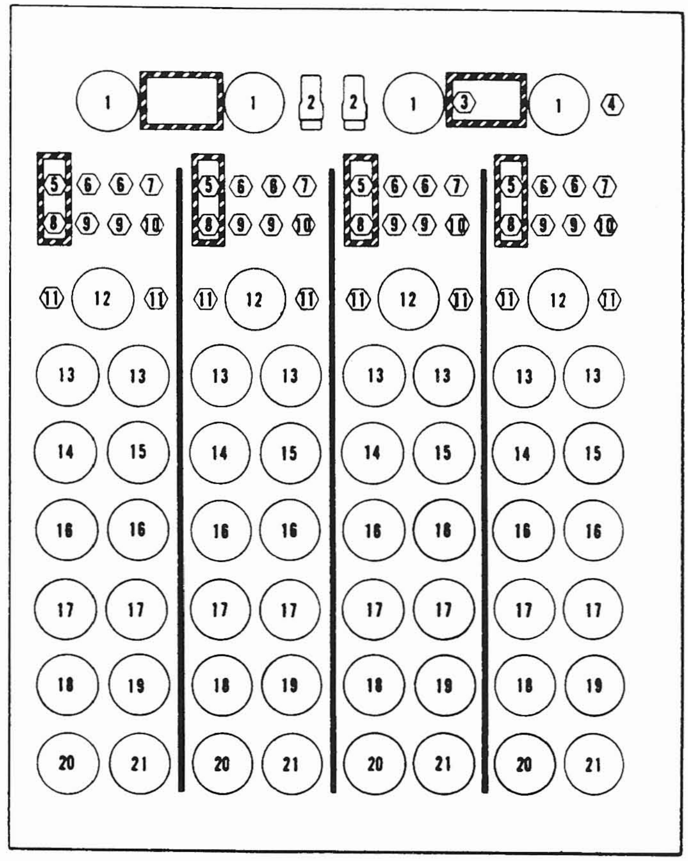
Below, close up view of the flight engineer's station with the throttles on the engineer's right and the fuel management board opposite the flight engineer's chair. (via Craig Kaston)



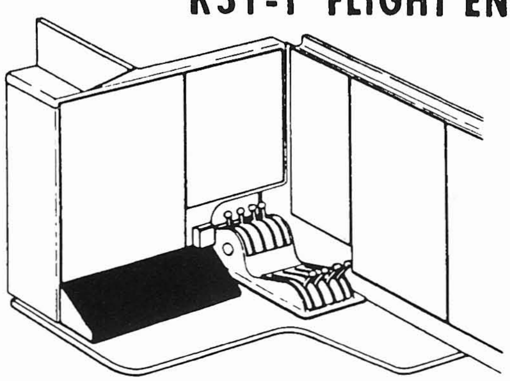
R3Y-1 FLIGHT ENGINEER'S LEFT FORWARD PANEL

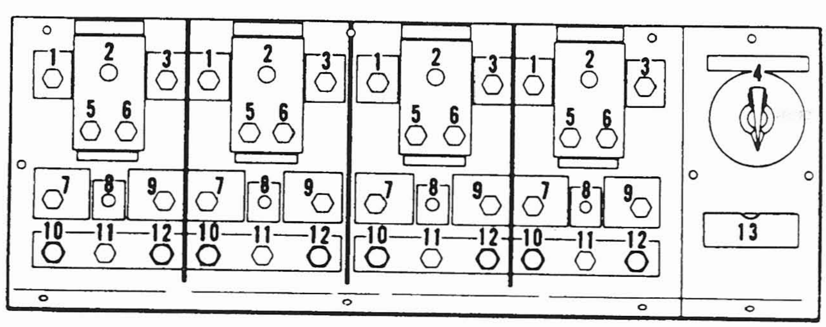
1. Turbine Time Indicator
2. Fire Extinguisher Discharge Switch
3. Fire Warning Lights Circuits Test Switch
4. Cargo Door Unlocked Light
5. Nacelle Fire Warning Light
6. Duct Door Closed Light
7. Oil Tank Pressure Low Light
8. Fire Extinguisher Selector Switch
9. Duct Door Switch
10. Oil Tank Pressurization Switch
11. Turbine Decoupled Light
12. Propeller Tachometer
13. Power Section Tachometer
14. Fuel Flow Indicator
15. Compressor Discharge Indicator
16. Turbine Inlet Temperature Indicator
17. Torquemeter
18. Power Section Oil Pressure Indicator
19. Gear Box Oil Pressure Indicator
20. Oil Temperature (All In) Indicator
21. Oil Quantity Indicator





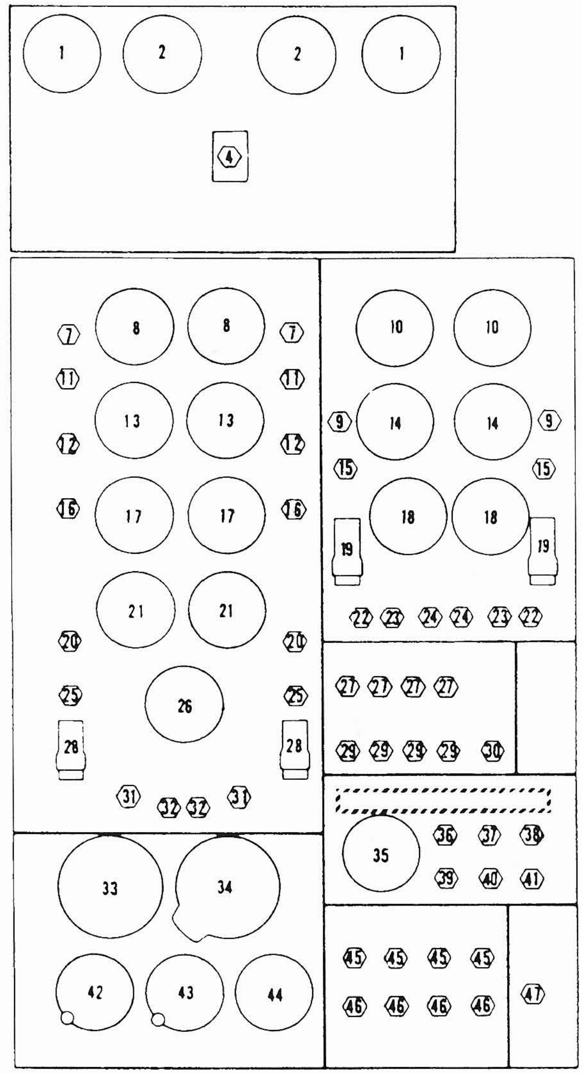
R3Y-1 FLIGHT ENGINEER'S FORWARD CONSOLE PANEL



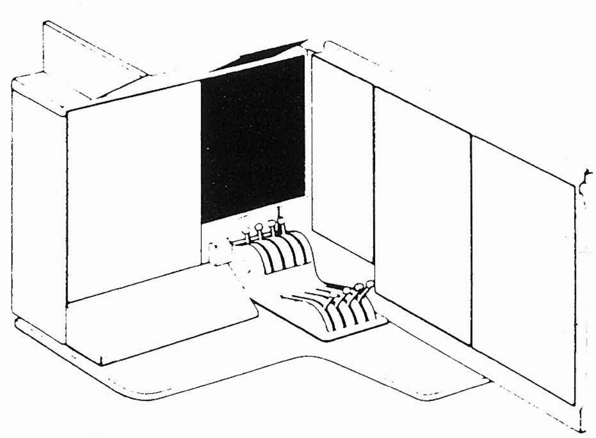


1. Left Power Section Stop-Run Switch
2. Oil Cooler Flap Control Switch
3. Right Power Section Stop-Run Switch
4. Leading Edge Duct Temperature Selector
5. Starter Valve Switch
6. Diffuser Flap Switch
7. Left Power Section Clutch, Control Switch
8. Motoring Control Switch
9. Right Power Section Clutch Control Switch
10. LH Primary Pump Failure Warning Light
11. LH and RH Primary Pump Test Switch
12. RH Primary Pump Failure Warning Light
13. Airspeed Correction Card

GTC CONTROL PANEL

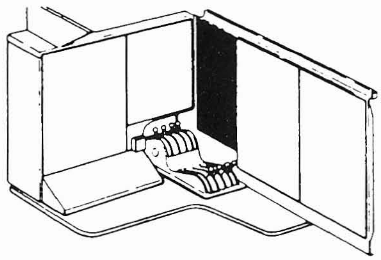


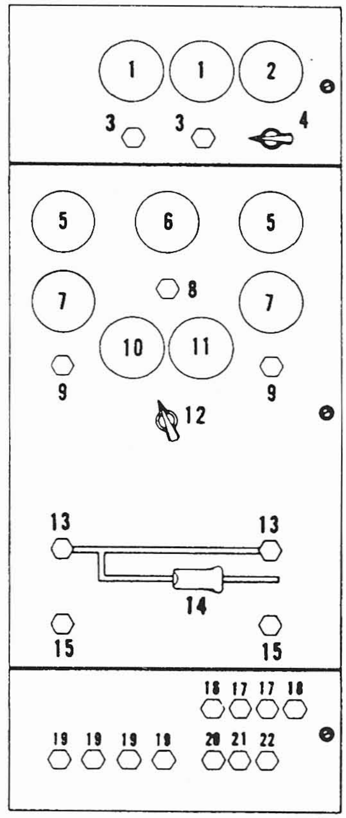
1. Engine Alternator A-C Ammeter
2. Engine Alternator Kilowatt-Kilovar Meter
3. Deleted
4. Engine Alternator Kilowatt-Kilovar Selector Switch
5. Deleted
6. Deleted
7. GTC Operating Light
8. GTC Tail-Pipe Temperature Indicator
9. GTM-ATM Selector Switch
10. GTM Combustion Chamber Temperature Indicator
11. GTC Starter Control Switch
12. GTC Bleed Air Shut-Off Switch
13. GTC Oil Temperature Indicator
14. GTM Oil Temperature Indicator
15. GTM Fire Detector "Push-to-Test" Lights
16. GTC Speed Control Switch
17. GTC Fuel and Oil Pressure Gage
18. GTM Oil Pressure Gage
19. GTM Fire Extinguisher Switch
20. GTC Stop Control Switch
21. GTC Tachometer
22. GTM Starter Control Switch
23. GTM Stop Control Switch
24. Cross-Over Duct Valve Switch
25. GTC Fire Detector "Push-to-Test" Lights
26. 100 PSI and 1500 PSI Systems Pressure Gage
27. Propeller Governor Control Switch
28. GTC Fire Extinguisher Switch
29. Propeller Synchronizing Switch
30. Master Propeller Synchronizing Switch
31. GTC-GTM Fuel Pump Switch
32. GTC-GTM Fuel Valve Switch
33. Airspeed Indicator
34. Altimeter
35. Leading Edge Duct Temperature Indicator
36. Anti-Ice Ground Test Light
37. Anti-Ice On Light
38. Anti-Ice Excess Heat Light
39. Anti-Ice Ground Test Switch
40. Anti-Ice Normal Switch
41. Anti-Ice Emergency Switch
42. Elapsed Time Clock
43. Standard Time Clock
44. Free Air Temperature Indicator
45. Propeller Anti-Ice On Light
46. Propeller Anti-Ice Switch
47. Compressor Door Anti-Ice Switch



R3Y-1 FLIGHT ENGINEER'S FORWARD SIDE PANEL

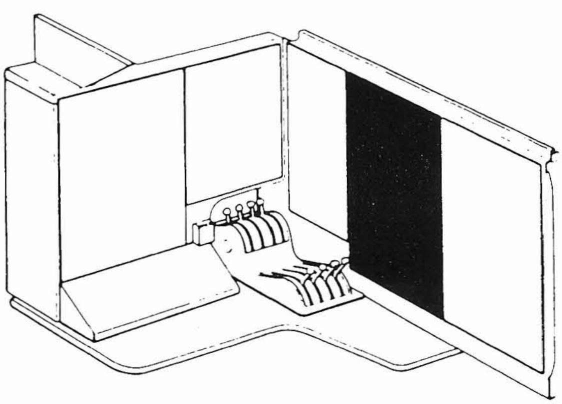
1. DC Ammeter
2. DC Voltmeter
3. Transformer Rectifier Switch
4. DC Voltmeter Selector Switch
5. AC Ammeter
6. Phase Sequence Indicator Lights & Test Switch
7. KWATT or KVAR Meter
8. KWATT-KVAR Selector Switch
9. Alternator Exciter Switch
10. Frequency Meter
11. AC Voltmeter
12. AC Voltmeter Selector Switch
13. Alternator Tie Breaker Indicator Lights
14. External Power Switch
15. Alternator Tie Breaker Switches
16. 1500 PSI Compressor Switch
17. 26V Transformer Indicator Lights
18. 26V Transformer Switch
19. Compressor Vane Anti-Ice Switches
20. Entrance Compartment Light Switch
21. Engineer's Compartment Light Switch
22. Battery Switch

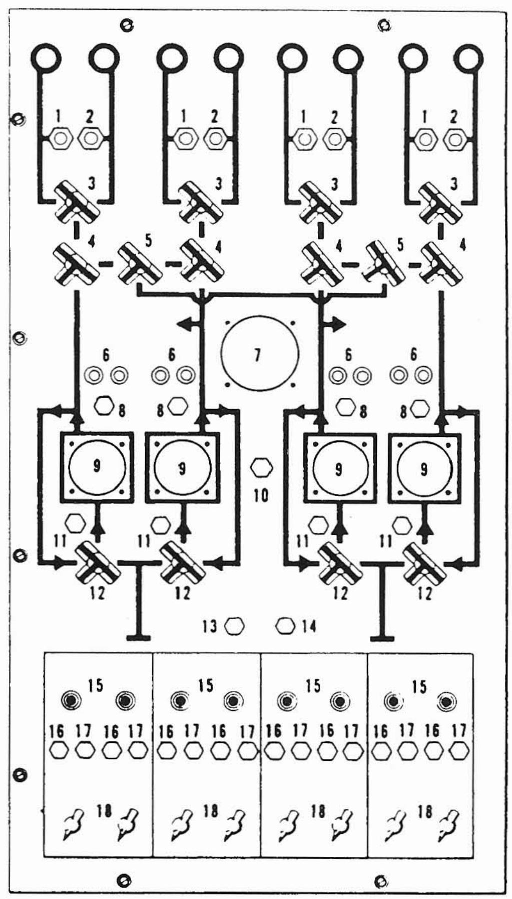




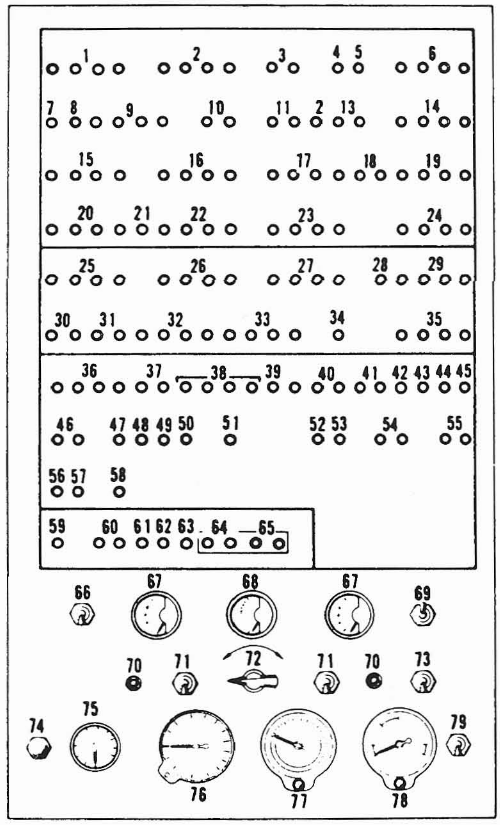
MIDDLE SIDE PANEL

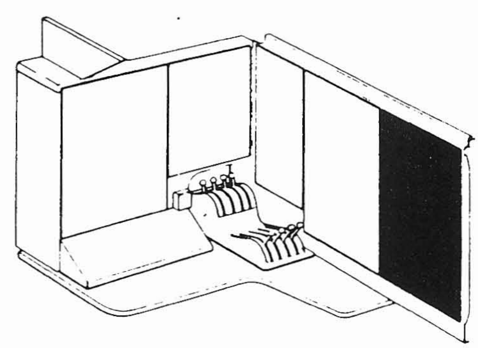
1. "PUSH TO OPERATE" Strainer Drain Switch
2. "PUSH TO OPERATE" Turbine System Drain Switch
3. Engine Selector Switch
4. Nacelle Selector Switch
5. Emer Cross Feed Selector Switch
6. Booster Pump On Light
7. Fuel Totalizer Gage
8. Booster Pump Switch
9. Fuel Tank Quantity Gage
10. Fuel Totalizer Gage Switch
11. Fuel Low Level Warning Light
12. Refuel-Defuel Selector Switch
13. Line Air Bleed Valve Switch
14. Line Drain Switch
15. Torquemeter Power Light
16. Torquemeter Power Switch
17. Torquemeter Calibration Switch
18. Torquemeter Calibration Control Rheostat





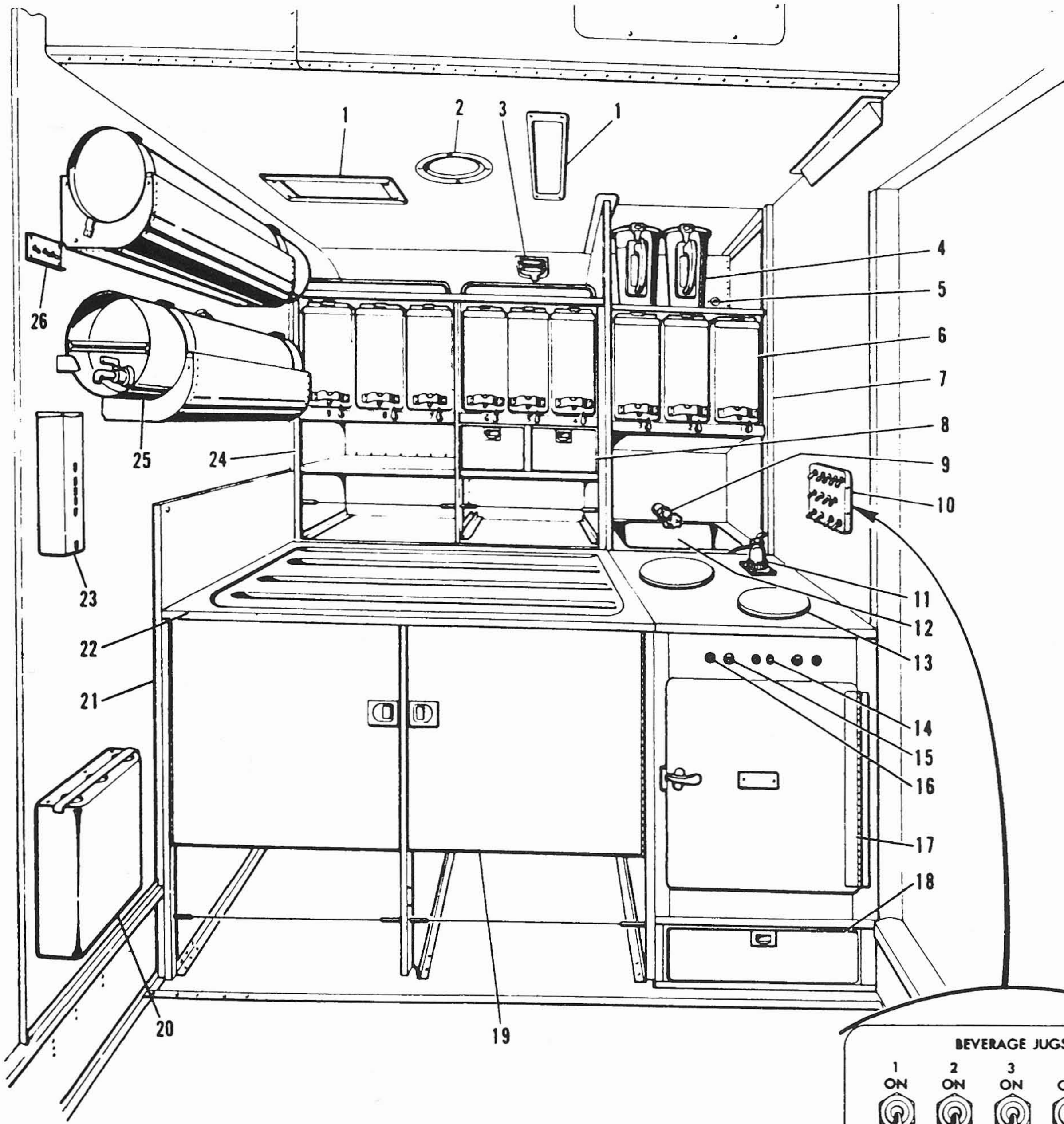
AFT SIDE PANEL

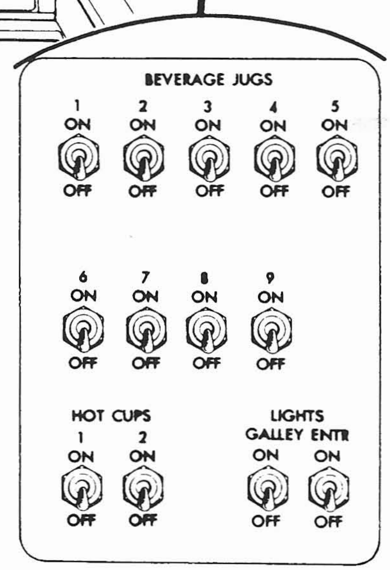




1. Engine Selector Valves
2. Tank Selector Valves
3. Emergency Cross Feed Valve
4. Refuel Drain Pump
5. Refuel Drain Valve
6. Refuel and Defuel Valves
7. GTC Fuel
8. GTM Fuel
9. Fuel Filter Drains
10. GTC-GTM Oil Temperature
11. GTC Fuel and Oil Pressure
12. GTM Oil Pressure
13. Fuel Low Level Warning
14. Fuel Booster Pump Controls
15. Oil Tank Pressure Shut-Off
16. Fuel and Oil Tank Pressure
17. Oil Cooler Flap Control
18. Oil Diverter
19. Oil Temperature
20. Fuel Quantity
21. Fuel Totalizer
22. Oil Quantity
23. Oil Pressure
24. Fuel Flow
25. Engine Control
26. Air Duct Door Control
27. Air Duct Door Warning
28. Synchronizing Power
29. Diffuser Flap Control
30. GTC Control
31. GTM Control
32. Compressor Discharge Pressure
33. Torquemeters
34. Free Air Temperature
35. Engine Control
36. Propeller Heat
37. Pneumatic System Control
38. Wing and Tail Anti-Ice Valves
39. Wing and Tail Anti-Ice Emergency
40. Cabin Temperature
41. Air Conditioning Valves
42. Cross Over Duct
43. Cabin Pressure
44. Humidifier Valve
45. Pneumatic System Pressure
46. Engineer and Cargo Compartment Lights
47. Entrance Lights
48. Aisle Lights
49. Utility Lights
50. Flood Lights
51. Anti-Ice Duct Temperature
52. Flow Control
53. Cigar Lighter
54. Detectors Engine-GTC-GTM
55. Extinguishers Engine-GTC-GTM
56. Servo Control
57. Filament Breaker
58. Field and Interlock
59. 26 Volt AC Control Warning
60. Transformer Rectifier Control
61. Battery Switch
62. External AC Power
63. Emer Relays
64. GTM Alternator Control
65. Engine Alternator Control
66. Compressor Valve Switch
67. LH and RH Duct Temperature Indicators
68. Cabin Temperature Indicator
69. Flow Control Switch
70. LH and RH Air Cond. Temp. Control Switches
71. LH and RH Air Cond. Switches
72. Cabin Temperature Rheostat
73. Humidifier Control Switch
74. Cabin Altitude Light
75. Cabin Pressure Altitude Indicator
76. Rate of Climb Indicator
77. Altitude Selector
78. Rate of Change Selector
79. Cabin Pressurization Switch

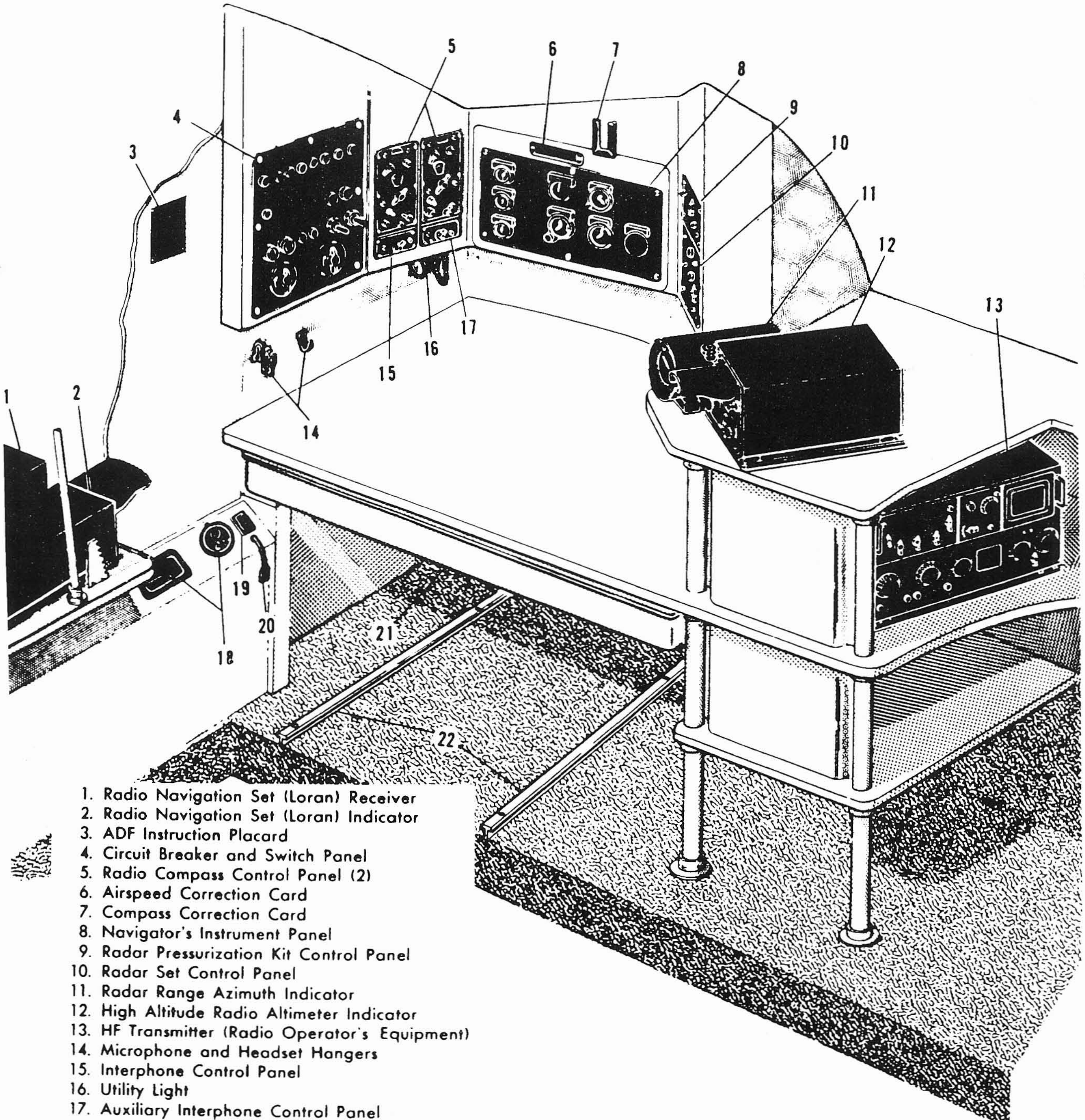
R3Y-1 BUFFET INSTALLATION





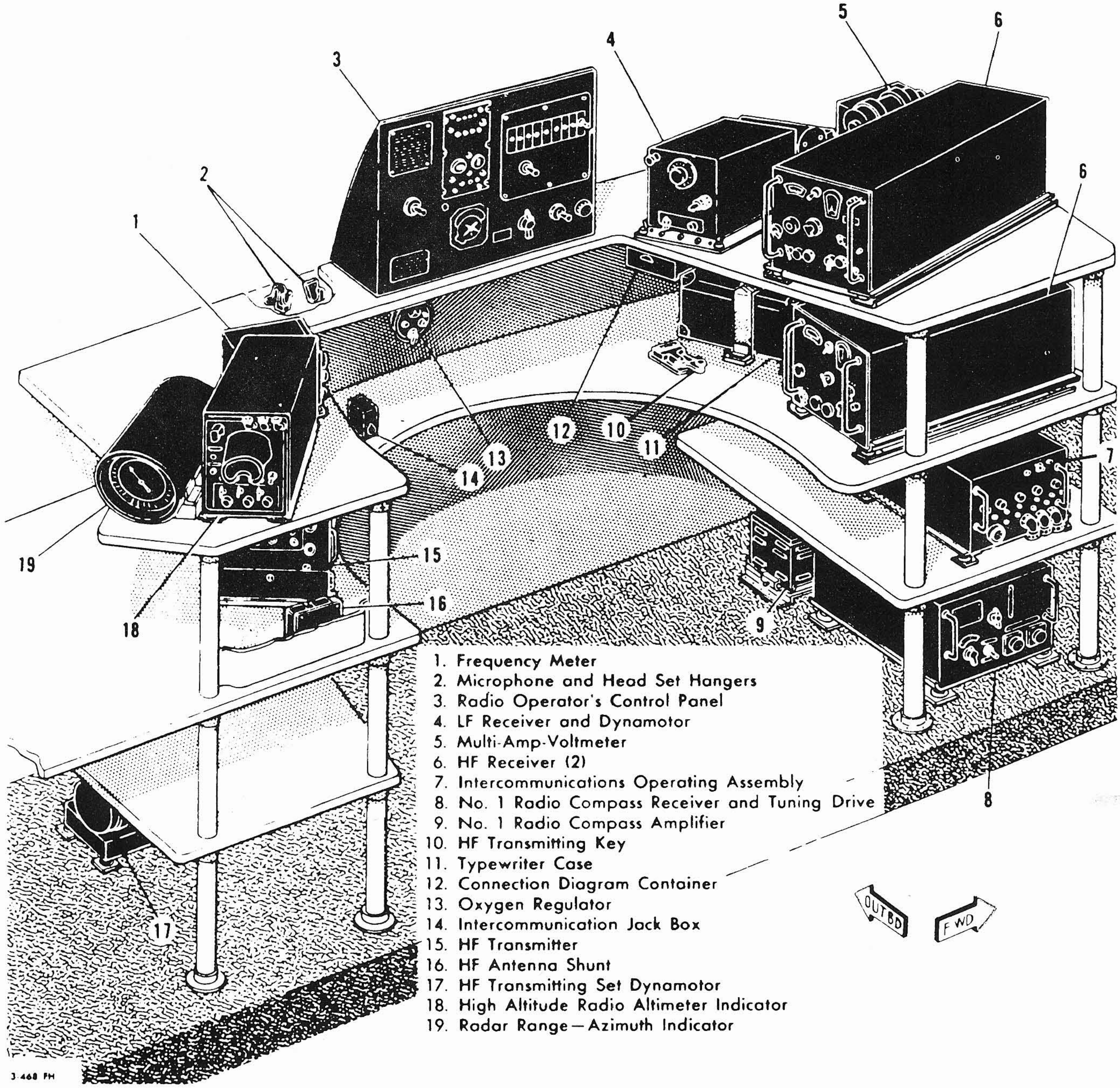
1. Fluorescent Light (2)(Ref)
2. Dome Light (Ref)
3. Ventilating Air Outlet (Ref)
4. Hot Cup (2)
5. Toaster Receptacle
6. Beverage Jug (9)
7. Buffet Fixed Section
8. Utility Drawer (2)
9. Water Faucet
10. Buffet Switch Panel
11. Cannon Plug Connection for Stove
12. Sink
13. Burner and Cover (2)
14. 115-Volt Utility Receptacle (2)
15. Burner Control Rheostat (2)
16. Burner Indicator Light (2)
17. Utility Cabinet
18. Waste Drawer
19. Storage Cabinet (2)
20. Drift Signal Container (Ref)
21. Buffet Removable Section
22. Counter Top
23. Paper Cup Container (Ref)
24. Storage Shelf (3)
25. Water Breaker (2)(Ref)
26. Cargo Compartment Switch Panel (Ref)

R3Y-2 NAVIGATOR'S STATION



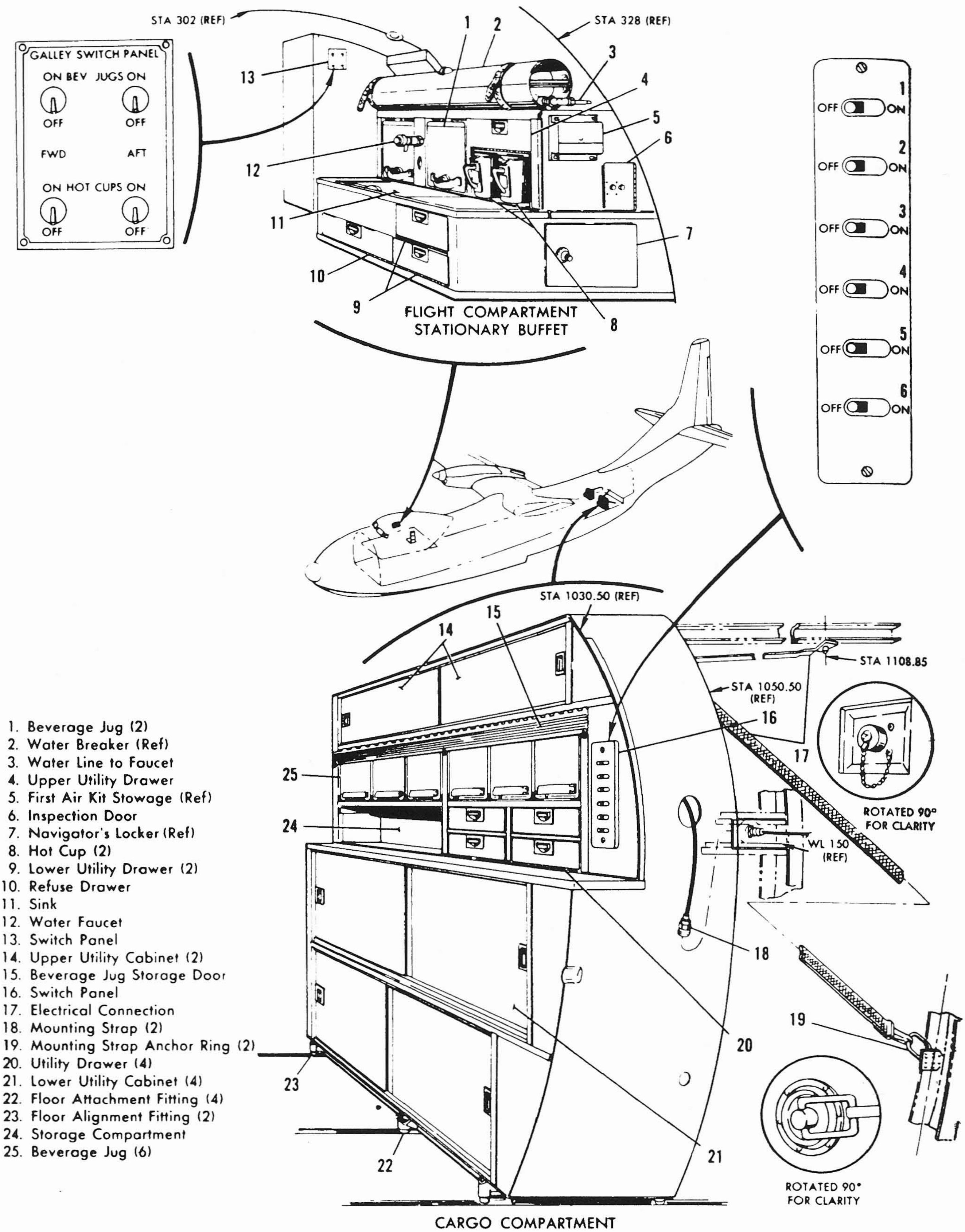
1. Radio Navigation Set (Loran) Receiver
2. Radio Navigation Set (Loran) Indicator
3. ADF Instruction Placard
4. Circuit Breaker and Switch Panel
5. Radio Compass Control Panel (2)
6. Airspeed Correction Card
7. Compass Correction Card
8. Navigator's Instrument Panel
9. Radar Pressurization Kit Control Panel
10. Radar Set Control Panel
11. Radar Range Azimuth Indicator
12. High Altitude Radio Altimeter Indicator
13. HF Transmitter (Radio Operator's Equipment)
14. Microphone and Headset Hangers
15. Interphone Control Panel
16. Utility Light
17. Auxiliary Interphone Control Panel
18. Oxygen Regulator and Mask Stowage
19. Interphone Jack Box
20. Boom Mike Jack Cord
21. Table Drawer
22. Chair Guide Rails

R3Y-2 RADIO OPERATOR'S STATION



1. Frequency Meter
2. Microphone and Head Set Hangers
3. Radio Operator's Control Panel
4. LF Receiver and Dynamotor
5. Multi-Amp-Voltmeter
6. HF Receiver (2)
7. Intercommunications Operating Assembly
8. No. 1 Radio Compass Receiver and Tuning Drive
9. No. 1 Radio Compass Amplifier
10. HF Transmitting Key
11. Typewriter Case
12. Connection Diagram Container
13. Oxygen Regulator
14. Intercommunication Jack Box
15. HF Transmitter
16. HF Antenna Shunt
17. HF Transmitting Set Dynamotor
18. High Altitude Radio Altimeter Indicator
19. Radar Range—Azimuth Indicator

R3Y-2 BUFFET INSTALLATION



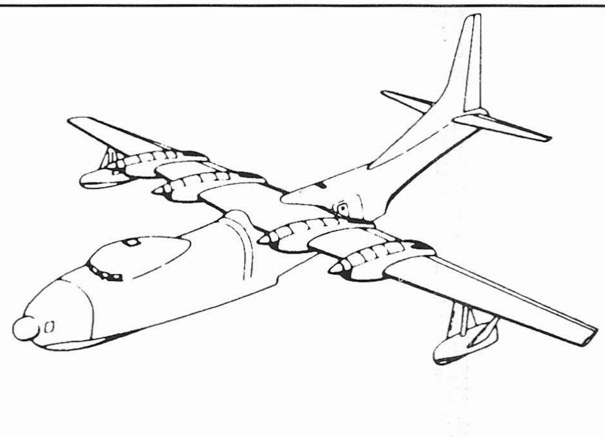
1. Beverage Jug (2)
2. Water Breaker (Ref)
3. Water Line to Faucet
4. Upper Utility Drawer
5. First Air Kit Stowage (Ref)
6. Inspection Door
7. Navigator's Locker (Ref)
8. Hot Cup (2)
9. Lower Utility Drawer (2)
10. Refuse Drawer
11. Sink
12. Water Faucet
13. Switch Panel
14. Upper Utility Cabinet (2)
15. Beverage Jug Storage Door
16. Switch Panel
17. Electrical Connection
18. Mounting Strap (2)
19. Mounting Strap Anchor Ring (2)
20. Utility Drawer (4)
21. Lower Utility Cabinet (4)
22. Floor Attachment Fitting (4)
23. Floor Alignment Fitting (2)
24. Storage Compartment
25. Beverage Jug (6)

CARGO COMPARTMENT
REMOVABLE BUFFET (2)
(LEFT SIDE SHOWN RIGHT SIDE SIMILAR)

R3Y-2 AFT FLIGHTDECK

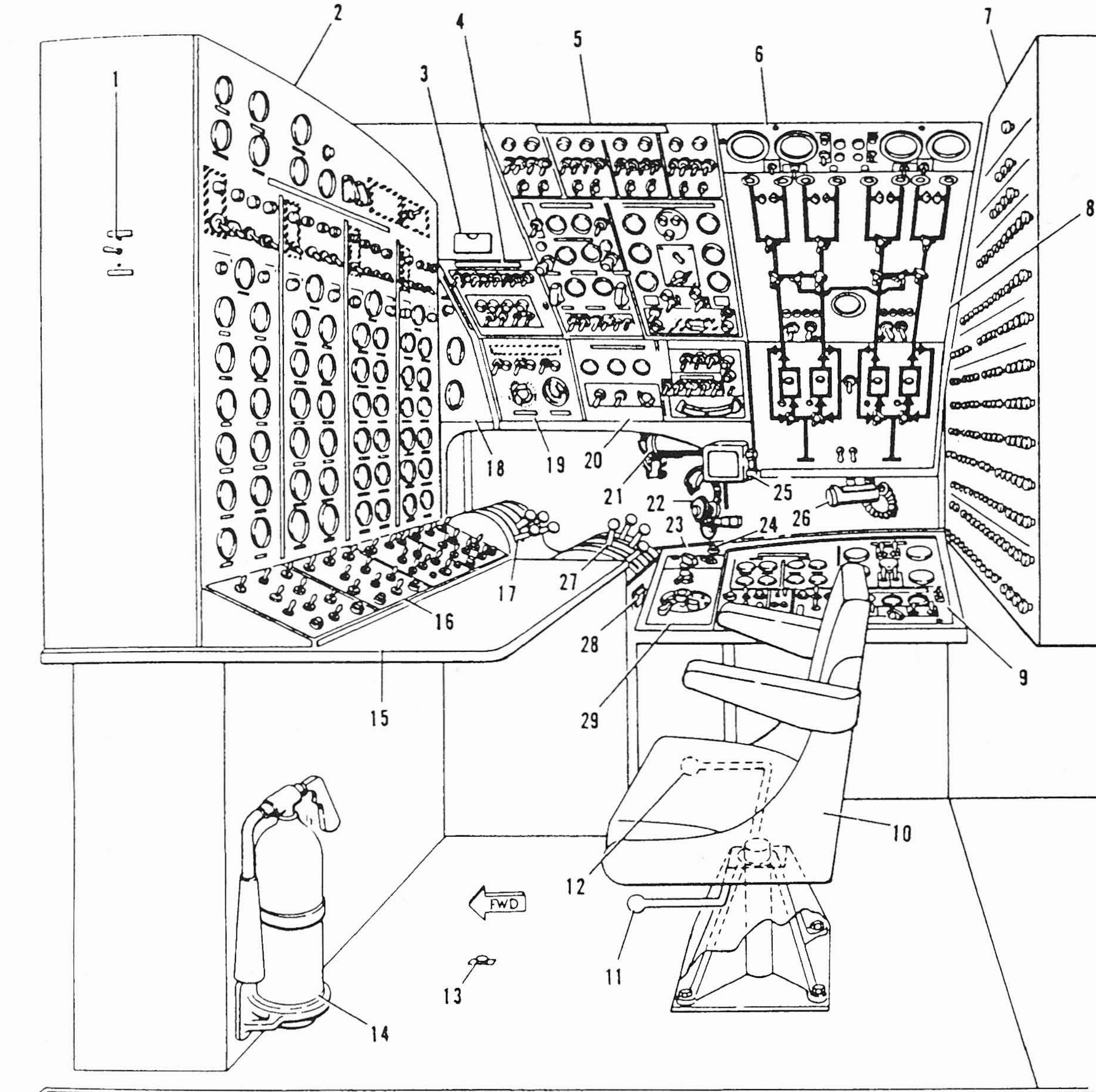
At right, looking aft through the flight engineer and navigation station to the radio station and to the buffet on the left. (SDAM)

Below, looking forward through the navigator station and the flight engineer station to the pilot's cockpit area. (SDAM)



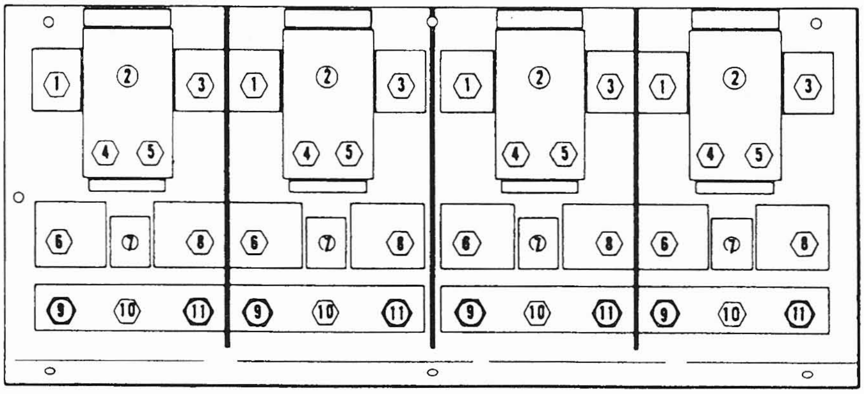
R3Y-2 BOWLOADER
TRANSPORT AIRPLANE

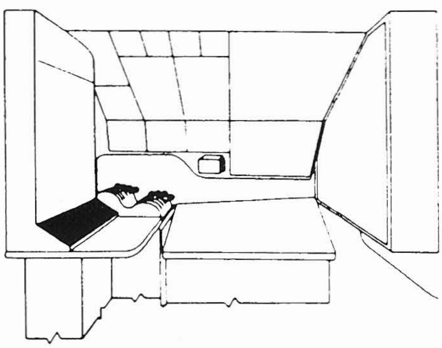
R3Y-2 FLIGHT ENGINEER STATION



1. Compartment Light Switch
2. Engine Instrument Panel
3. Airspeed Correction Card Holder
4. Propeller Control Panel
5. Alternator Control Panel
6. Engine Alternator Control Panel
7. Circuit Breaker Panel
8. Fuel Control Panel
9. Gas Turbine Compressor Control Panel
10. Seat
11. Vertical Seat Adjustment Handle
12. Rotate-Release Handle
13. Intercommunication Foot Switch
14. Fire Extinguisher
15. Table
16. Console Switch Panel
17. Regime (Feather) Control Levers
18. Flight Instrument Panel
19. Wing And Tail Anti-Icing Control Panel
20. Transformer Rectifier Control Panel
21. Flashlight
22. Headset
23. Interphone Control Panel
24. Cigar Lighter
25. Check List
26. Utility Light
27. Power Control Levers
28. Jack Box
29. Oxygen Regulator

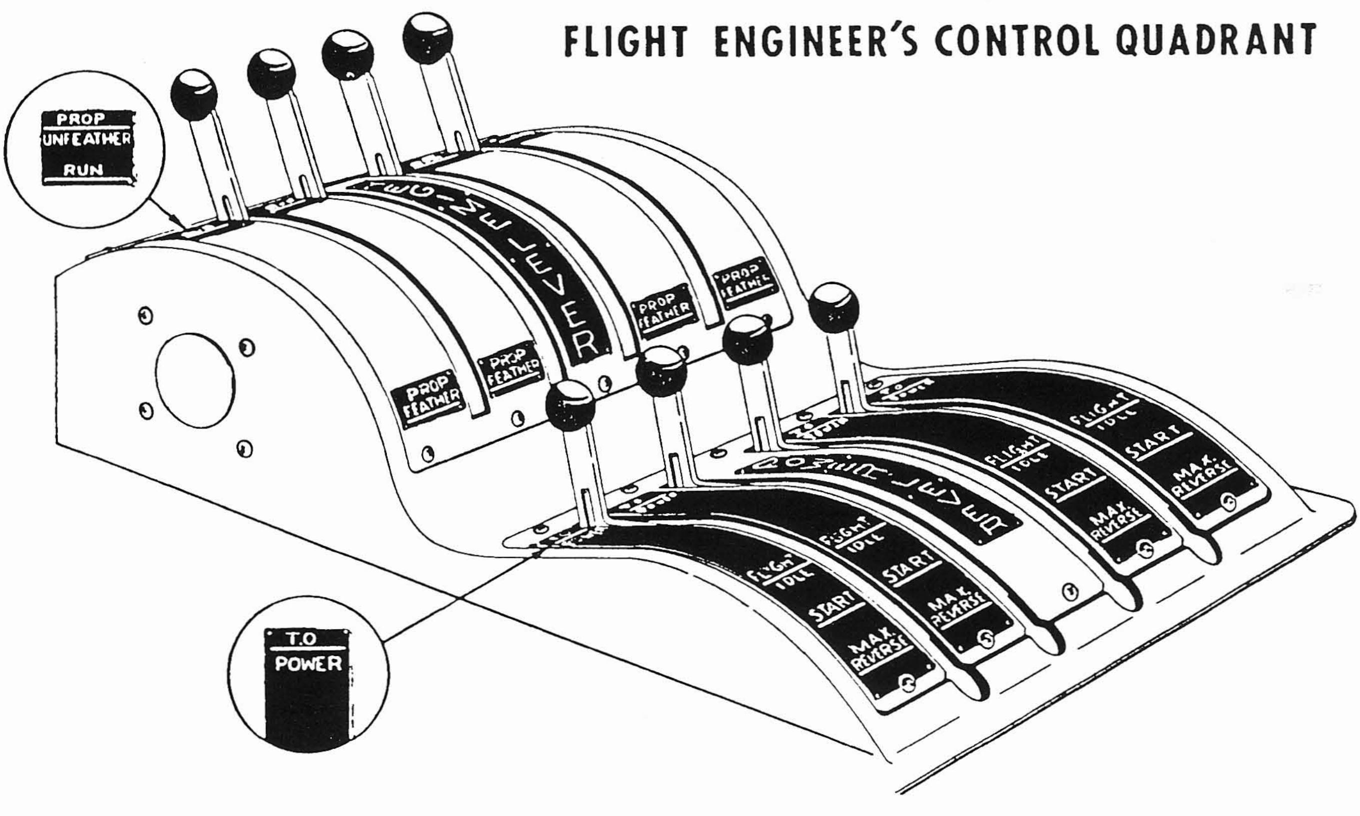
R3Y-2 FLIGHT ENGINEER'S FORWARD CONSOLE PANEL





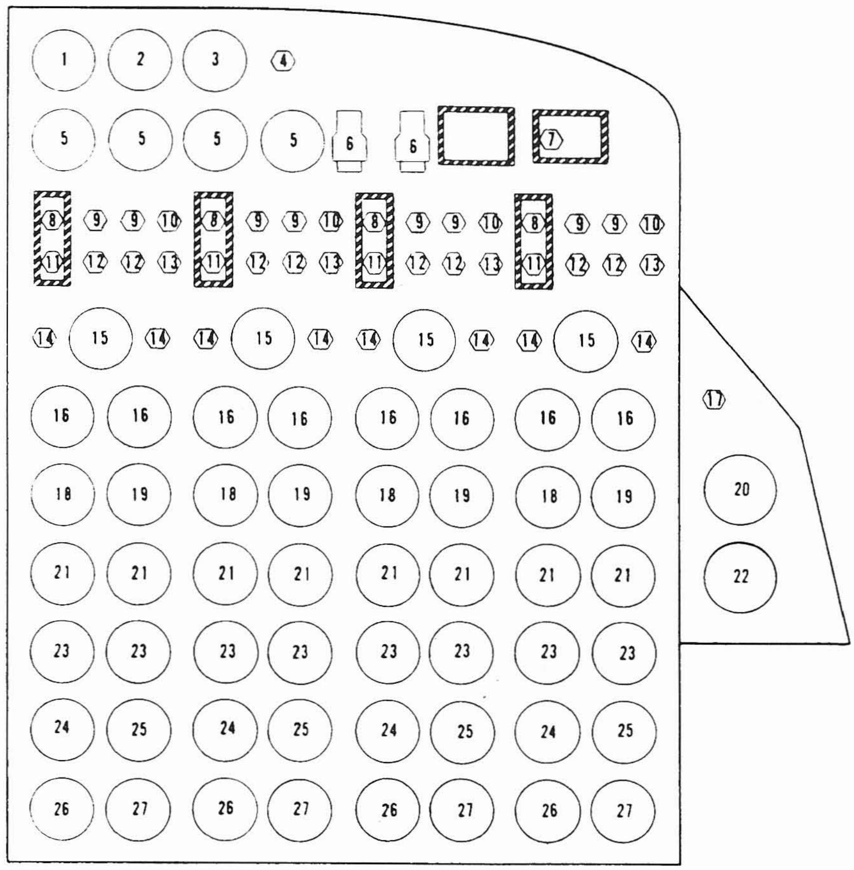
1. Left Power Section Stop-Run Switch
2. Oil Cooler Flap Control Switch
3. Right Power Section Stop-Run Switch
4. Starter Valve Switch
5. Diffuser Flap Switch
6. Left Power Section Clutch Control Switch
7. Motoring Control Switch
8. Right Power Section Clutch Control Switch
9. LH Primary Pump Failure Warning Light
10. LH and RH Primary Pump Test Switch
11. RH Primary Pump Failure Warning Light

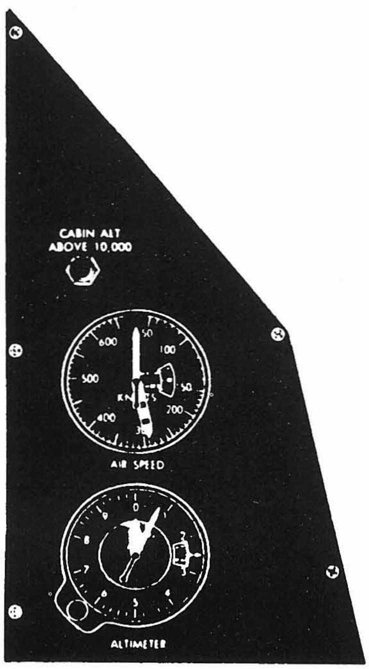
FLIGHT ENGINEER'S CONTROL QUADRANT



R3Y-2 FLIGHT ENGINEER'S FORWARD PANEL

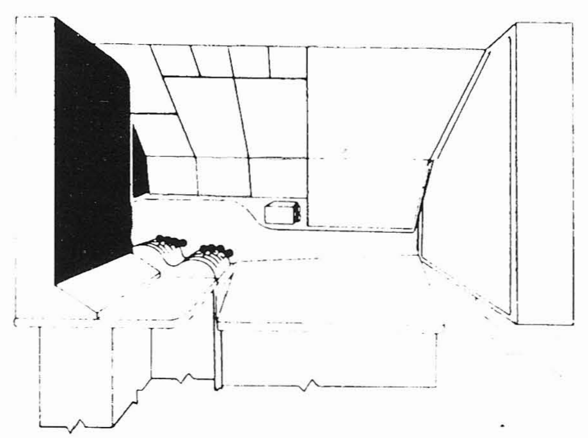
1. Elapsed Time Clock
2. Standard Time Clock
3. Free Air Temperature Gage
4. Cargo Door Unlocked Light
5. Turbine Time Indicator
6. Fire Extinguisher Discharge Switch
7. Fire Warning Lights Circuits Test Switch
8. Nacelle Fire Warning Light
9. Duct Door Closed Light
10. Oil Tank Pressure Low Light
11. Fire Extinguisher Selector Switch
12. Duct Door Closed Switch
13. Oil Tank Pressurization Switch
14. Turbine Stopped Light



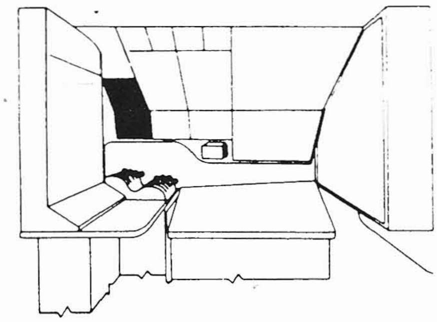


15. Propeller Tachometer
16. Power Section Tachometer
17. Cabin Altitude Light
18. Fuel Flow Indicator
19. Compressor Discharge Indicator
20. Air Speed Indicator
21. Turbine Inlet Temperature Indicator
22. Altimeter
*23. Torquemeter
24. Power Section Oil Pressure Indicator
25. Gear Box Oil Pressure Indicator
26. Oil Temperature All In Indicator
27. Oil Quantity Indicator

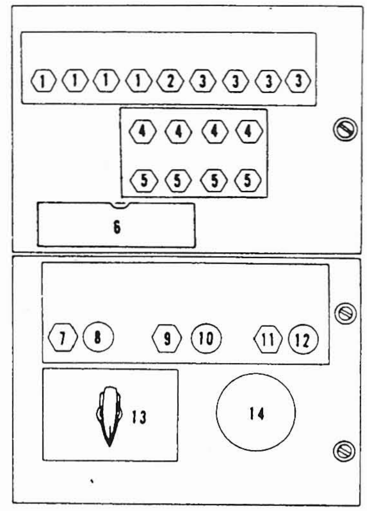
* TORQUEMETERS AND TORQUEMETER CONTROLS ARE DELETED FROM R3Y 2 AIRPLANES NO 131720 NO 131721, NO 131722



R3Y-2 FLIGHT ENGINEER'S FORWARD SIDE PANEL

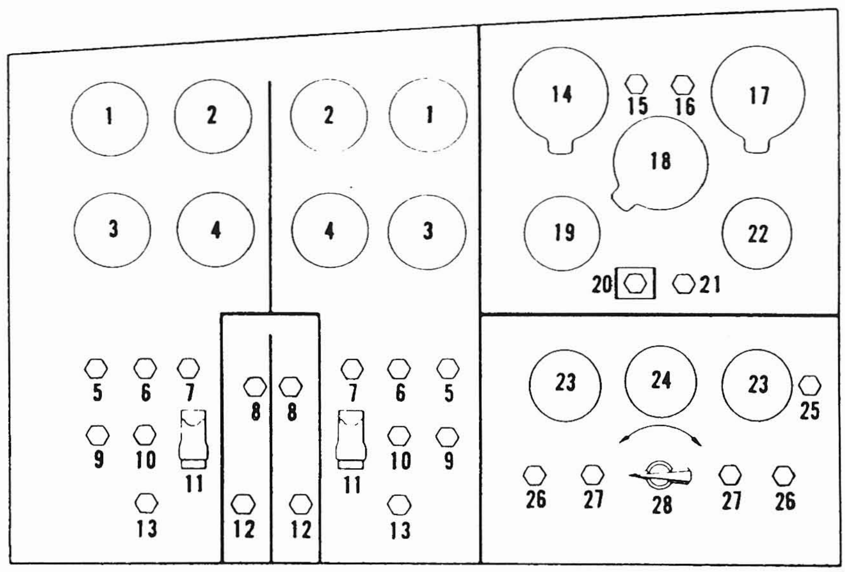


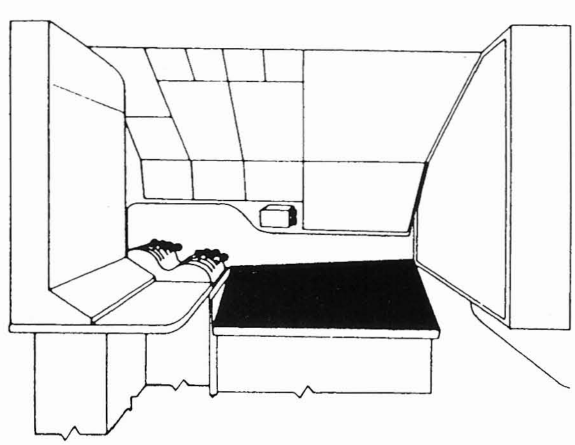
1. Propeller Governor Control Switch
2. Master Synchronizing Switch
3. Propeller Synchronizing Switch
4. Propeller Anti-Ice Light
5. Propeller Anti-Ice Switch
6. Airspeed Correction Card
7. Anti-Ice Ground Test Switch
8. Anti-Ice Ground Test Light
9. Anti-Ice Normal Switch
10. Anti-Ice On Light
11. Anti-Ice Emergency Switch
12. Anti-Ice Excess Heat Light
13. Leading Edge Duct Temperature Selector
14. Leading Edge Duct Temperature Indicator



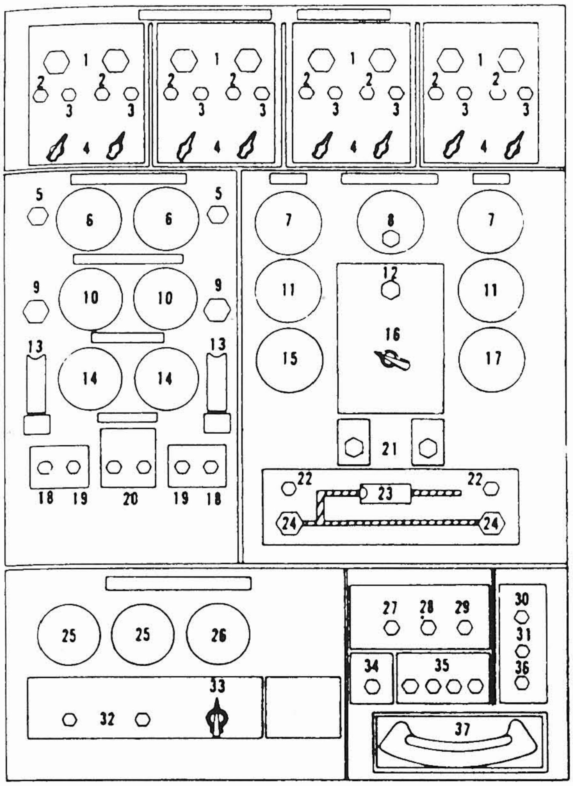
R3Y-2 FLIGHT ENGINEER'S SIDE CONSOLE PANEL

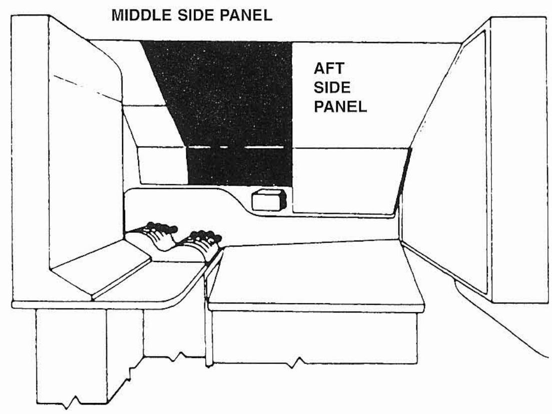
1. GTC Tachometers
2. GTC Tail Pipe Temp Indicators
3. GTC Fuel Pressure Indicators
4. GTC Oil Temp Indicators
5. GTC Operating Lights
6. GTC Starter Control Switches
7. GTC Push-to-Test Lights
8. GTC-GTM Valve Switches
9. GTC Bleed Shut-Off Switches
10. GTC Stop Control Switches
11. GTC Fire Extinguisher Switches
12. GTC-GTM Fuel Pump Switches
13. GTC Speed Control Switches
14. Rate-of-Climb Switch
15. Flow Control Switch
16. Cabin Pressurization Switch
17. Altitude Selector
18. Pneumatic Systems Pressure Indicator
19. Rate-of-Climb Indicator
20. 100 PSI System Control Switch
21. 1500 PSI System Control Switch
22. Cabin Pressure Altitude Indicator
23. LH and RH Duct Temp Indicator
24. Cabin Temp Indicator
25. Humidifier Control Switch
26. LH and RH Air Cond Temp Control Switches
27. LH and RH Air Cond On-Off Control Switches
28. Cabin Temp Rheostat





R3Y-2 FLIGHT ENGINEER'S MIDDLE SIDE PANEL

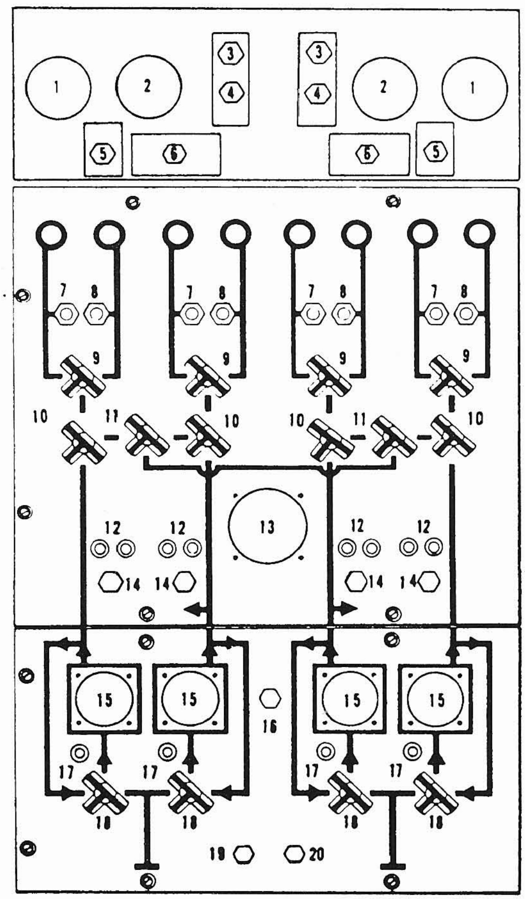




- *1. Torquemeter Power Lights
- *2. Torquemeter Power Switches
- *3. Torquemeter Calibration Switches
- *4. Torquemeter Calibration Controls
- 5. GTM-ATM Selector Switches
- 6. GTM Combustion Chamber Temp Indicators
- 7. AC Ammeters
- 8. Phase Sequence Indicator Lights and Test Switch
- 9. GTM Push-to-Test Fire Detector Lights
- 10. GTM Oil Temp Indicators
- 11. KWATT or KVAR Indicators
- 12. KWATT-KVAR Selector Switch
- 13. GTM Fire Extinguisher Switches
- 14. GTM Oil Pressure Indicators
- 15. Frequency Meter
- 16. AC Volt-Freq Selector Switch
- 17. AC Voltmeter
- 18. GTM Starter Control Switches
- 19. GTM Stop Control Switches
- 20. Cross-Over Duct Valve Switches
- 21. Alternator Exciter Switches
- 22. Alternator Tie Breaker Switches
- 23. External Power Switch
- 24. Alternator Tie Breaker Indicator Lights
- 25. DC Ammeters
- 26. DC Voltmeter
- 27. Emergency and Entrance Lights Switch
- 28. Compartment Lights Switch
- 29. Battery Switch
- 30. 26 Volts AC Main Out Indicator Light
- 31. 26 Volts AC Both Out Indicator Light
- 32. Transformer Rectifier Control Switches
- 33. DC Voltmeter Selector Switch
- 34. Compressor Door Anti-Ice Switch
- 35. Compressor Vane Anti-Ice Switches
- 36. 26-Volt Transformer Switch
- 37. Inclinometer

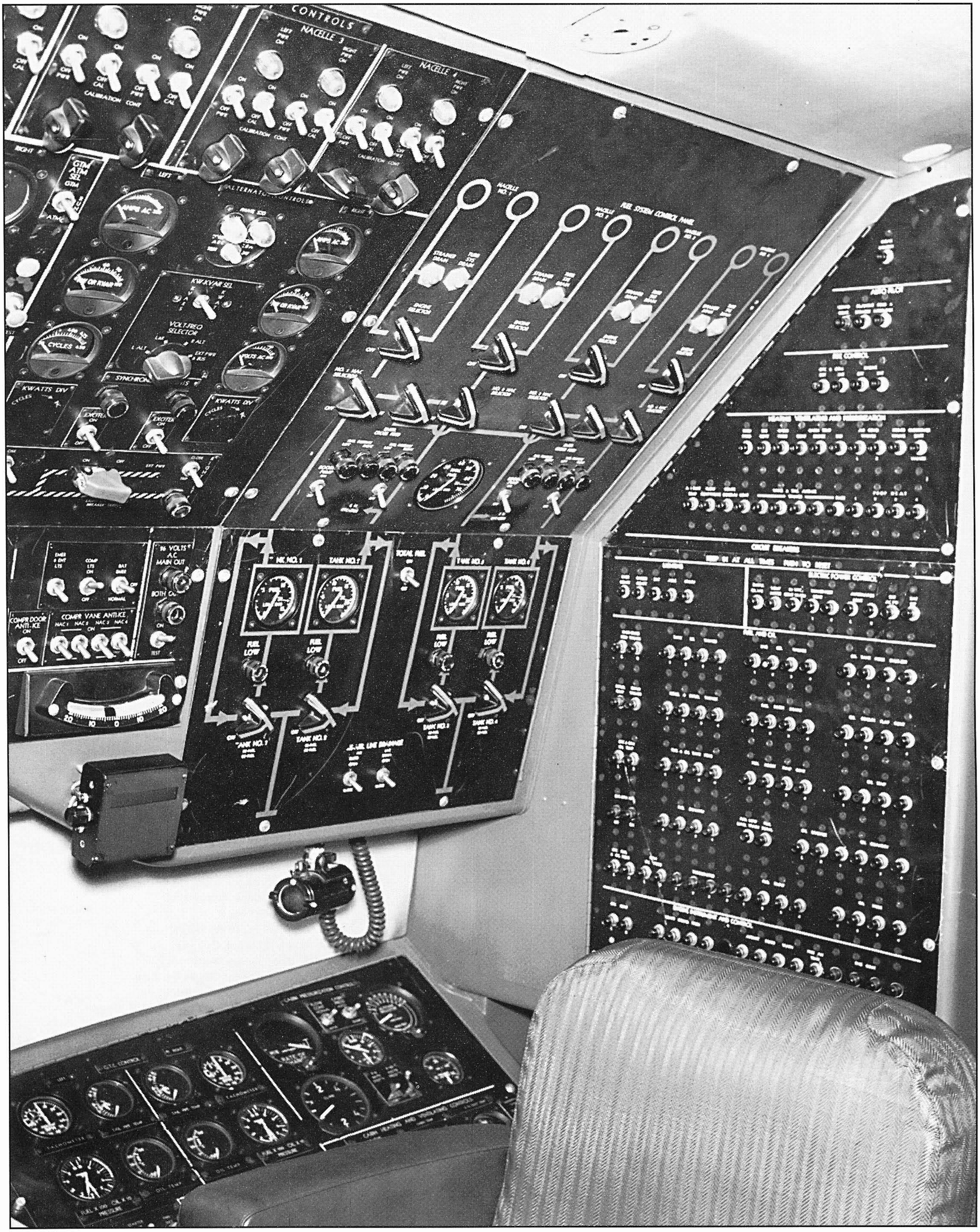
* TORQUEMETERS AND TORQUEMETER CONTROLS ARE DELETED FROM R3Y-2 AIRPLANES NO. 131720, NO. 131721, NO. 131722.

AFT SIDE PANEL

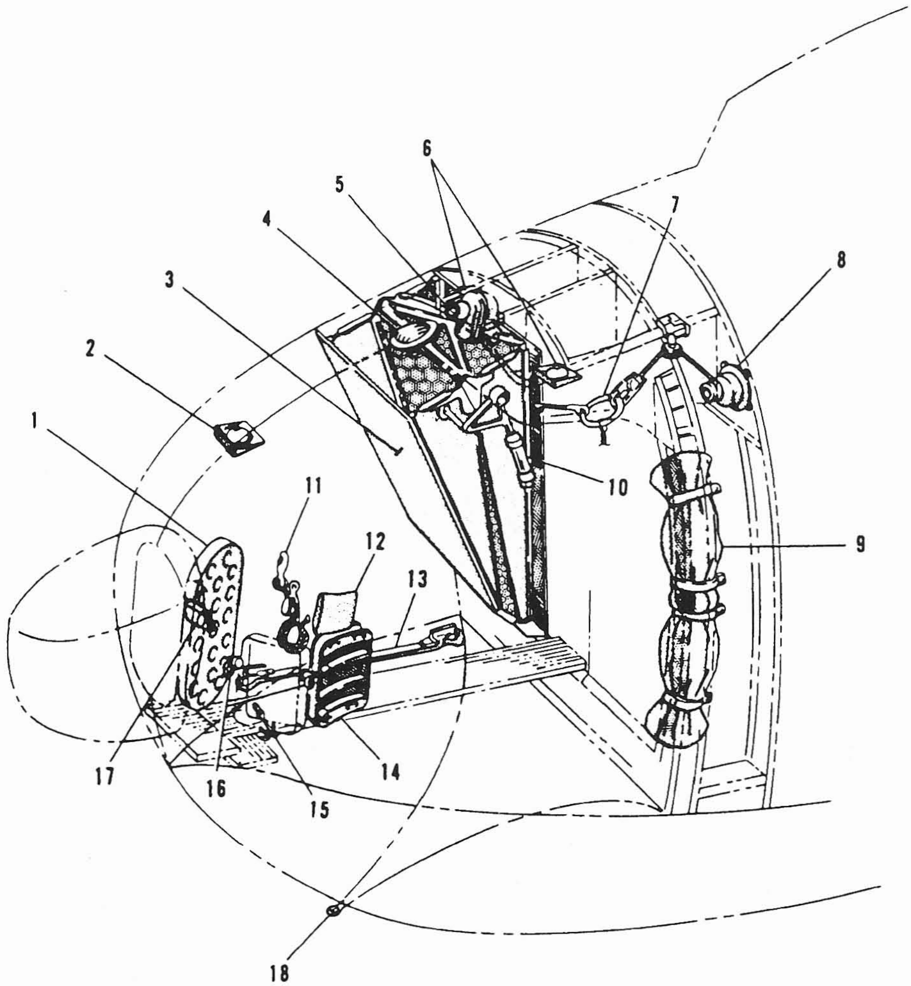


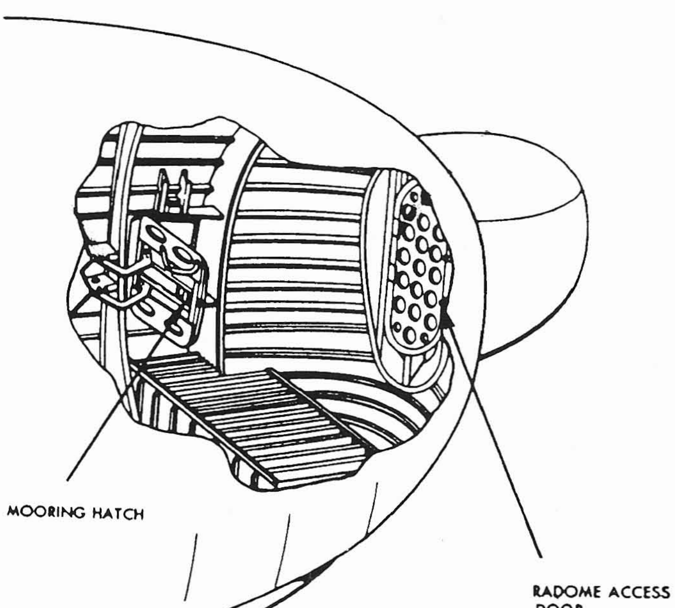
1. AC Ammeter
2. KWATT-KVAR Meter
3. Tie Breaker Indicator Light
4. Tie Breaker Switch
5. Exciter Switch
6. KW-KVAR Selector Switch
7. Strainer Drain Switch
8. Turbine System Drain Switch
9. Engine Selector Switch
10. Nacelle Selector Switch
11. Emergency Cross Feed Selector Switch
12. Booster Pump On Light
13. Fuel Totalizer Indicator
14. Booster Pump Switch
15. Fuel Tank Quantity Indicator
16. Fuel Totalizer Switch
17. Fuel Low Level Warning Light
18. Refuel-Defuel Selector Switch
19. Line Air Bleed Valve Switch
20. Line Drain Switch

R3Y-2 SIDE AND REAR FACING FLIGHT ENGINEER'S PANELS



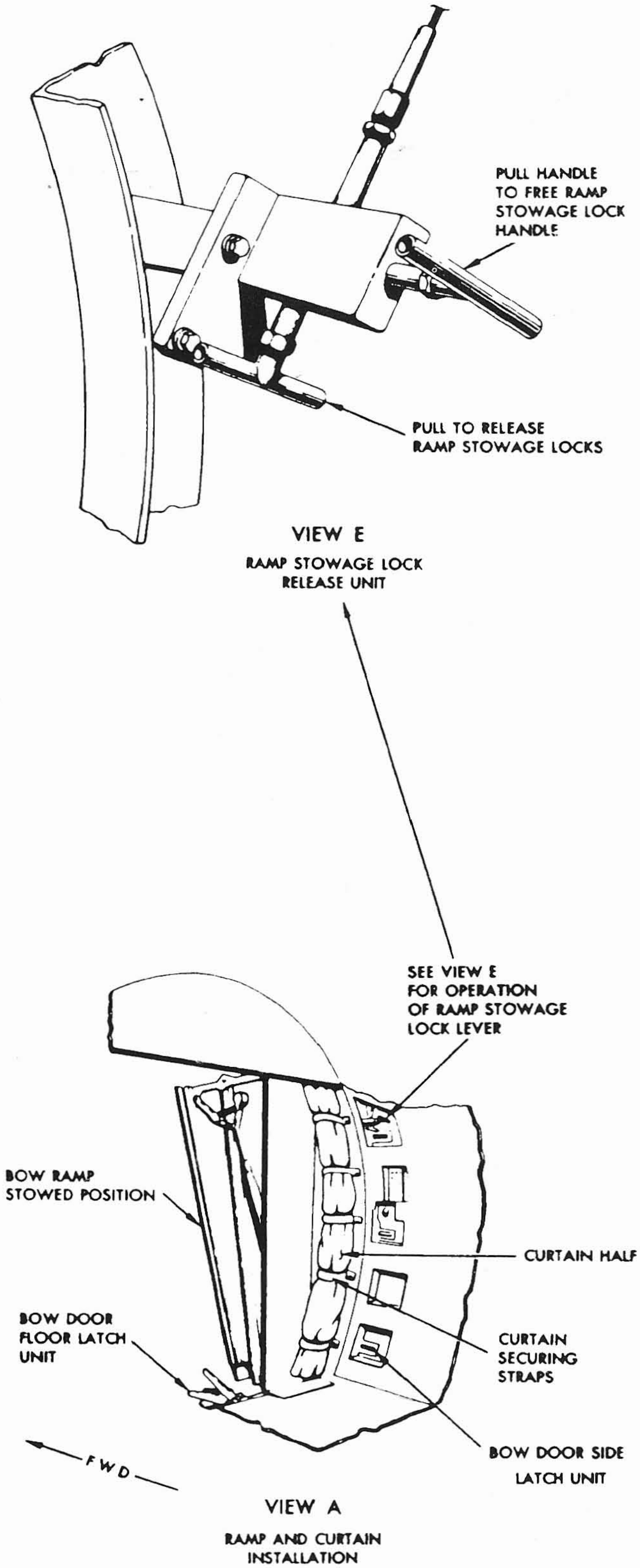
R3Y-2 BOW COMPARTMENT

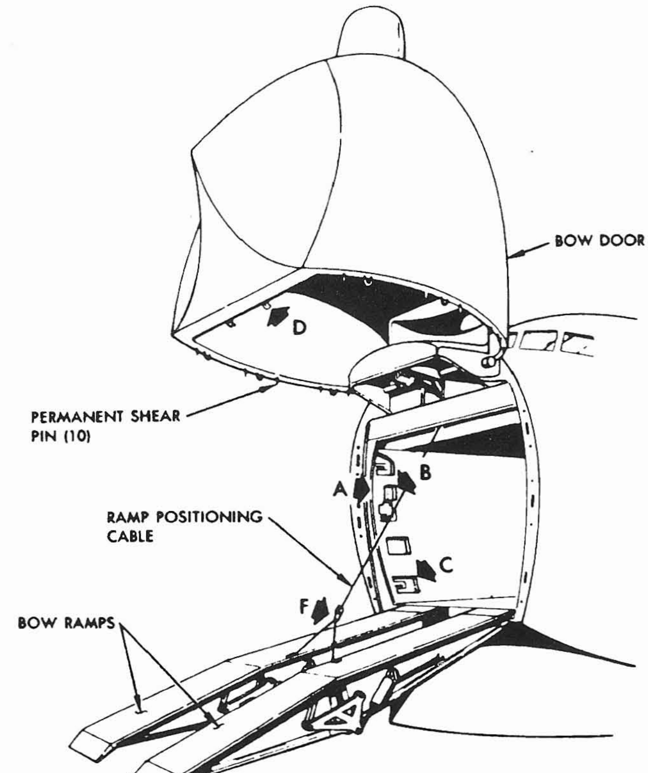


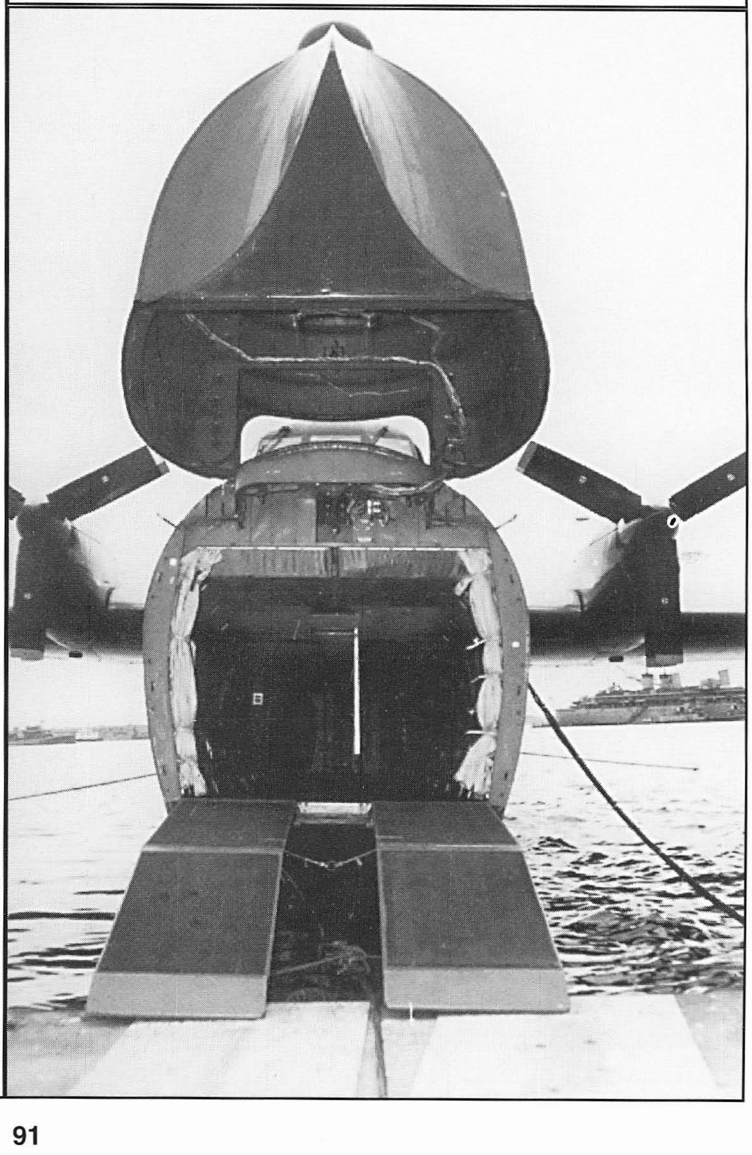


1. Radome Access Door
2. Dome Light
3. Bow Ramp (right shown)
4. Anchor Light
5. Bow Door Motor
6. Ramp Flood Lights (2)
7. Ramp Cable Assembly
8. Ramp Motor
9. Bow Compartment Curtain
10. Ramp Extend Cylinder
11. Anchor Pulley Assembly
12. Anchor Pulley Stowage Bag
13. Anchor Strut Stowage
14. Mooring Hatch
15. Grappling Hook Stowage
16. Saftey Belt Attach Rings
17. Interphone Jack Box
18. Bow Pendent

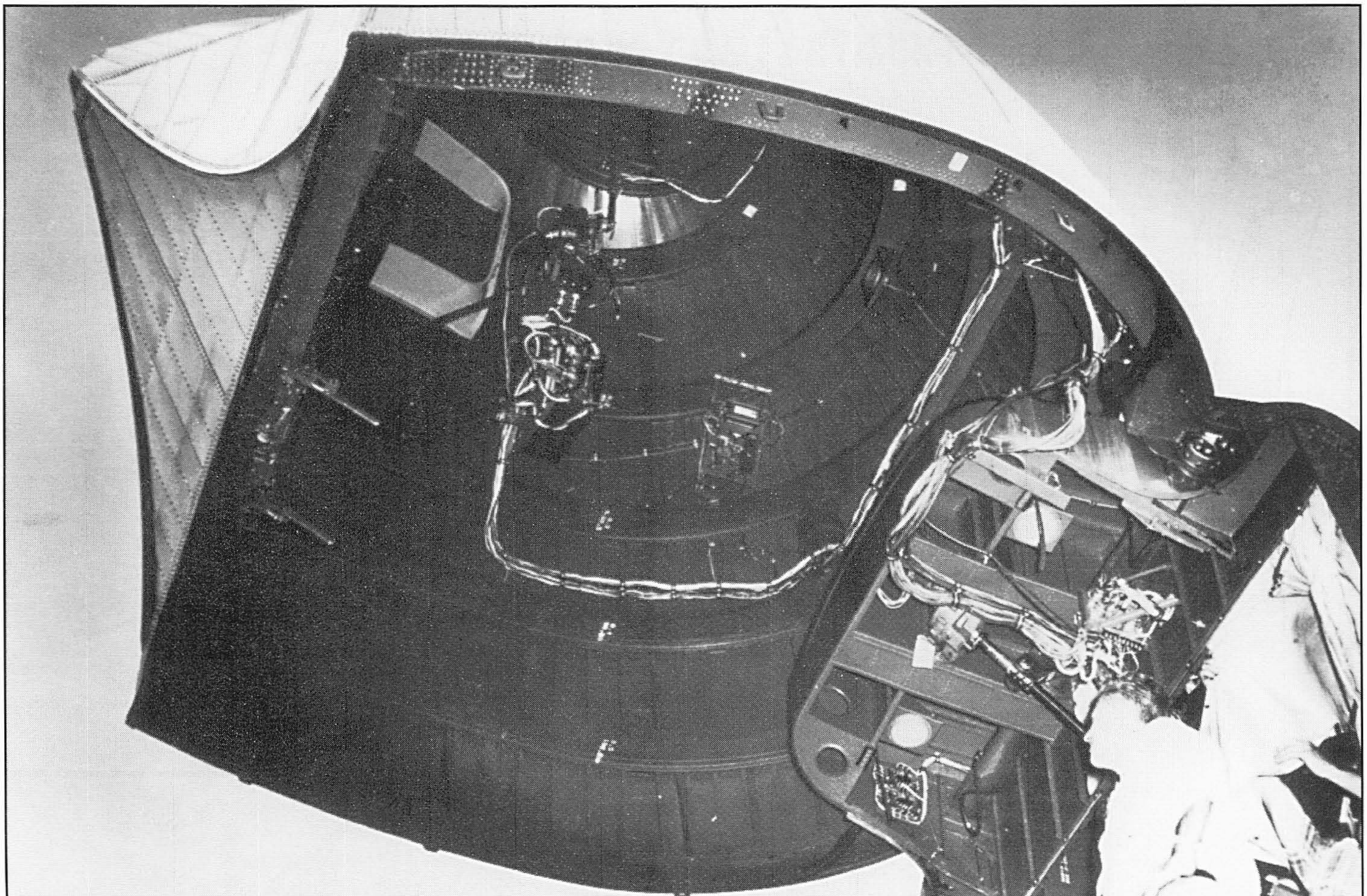
R3Y-2 BOW DOOR

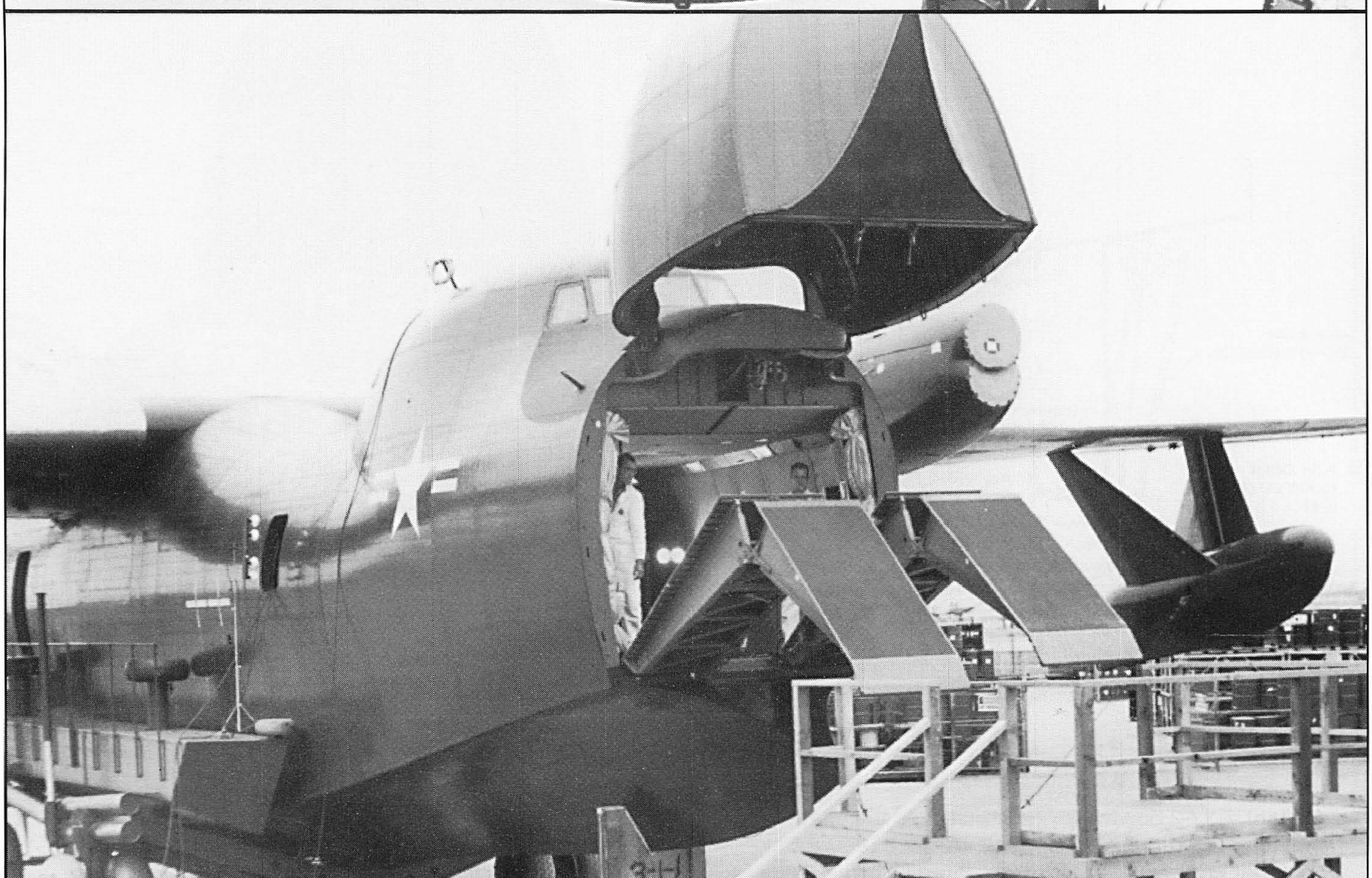


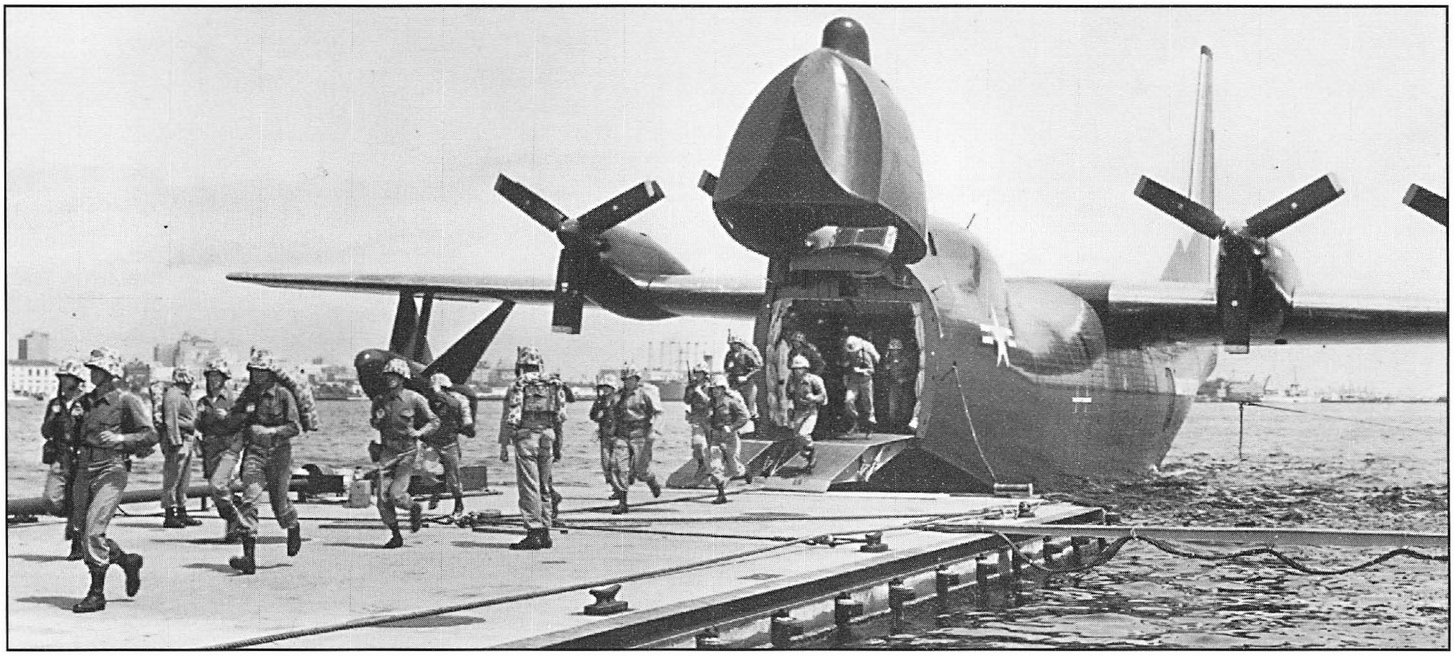




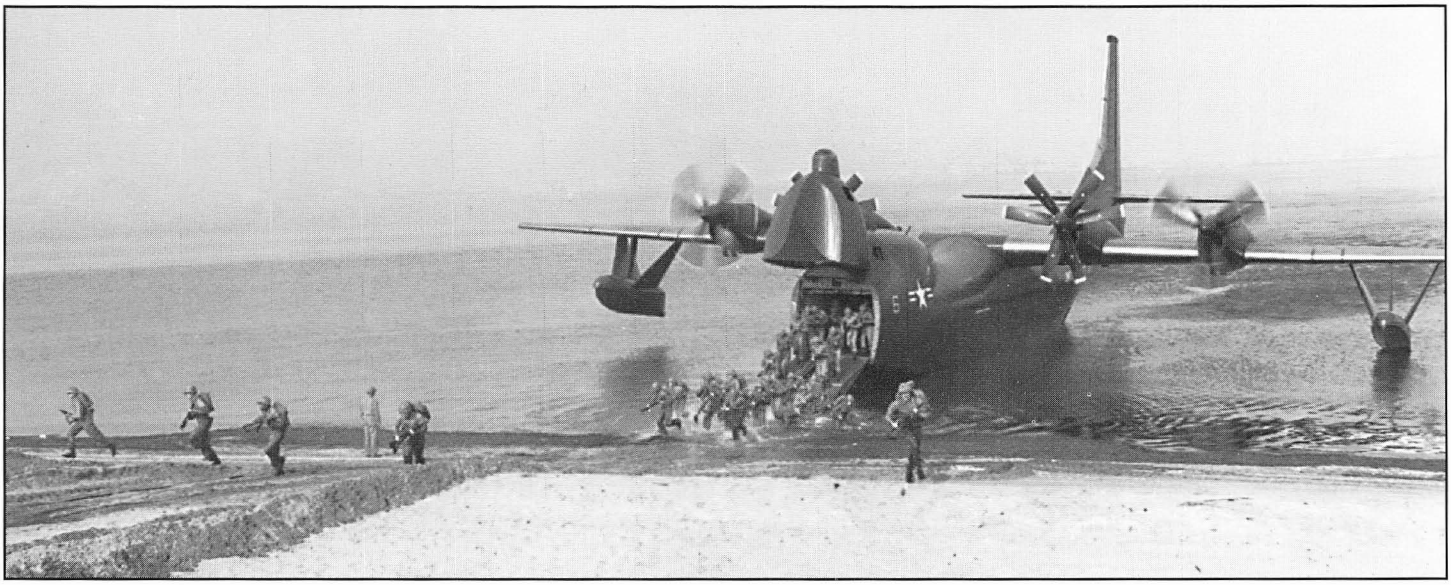
At right, R3Y-2 bowloader demonstrates the usage of the loading ramps on a dock in San Diego Bay. (Combat Models)





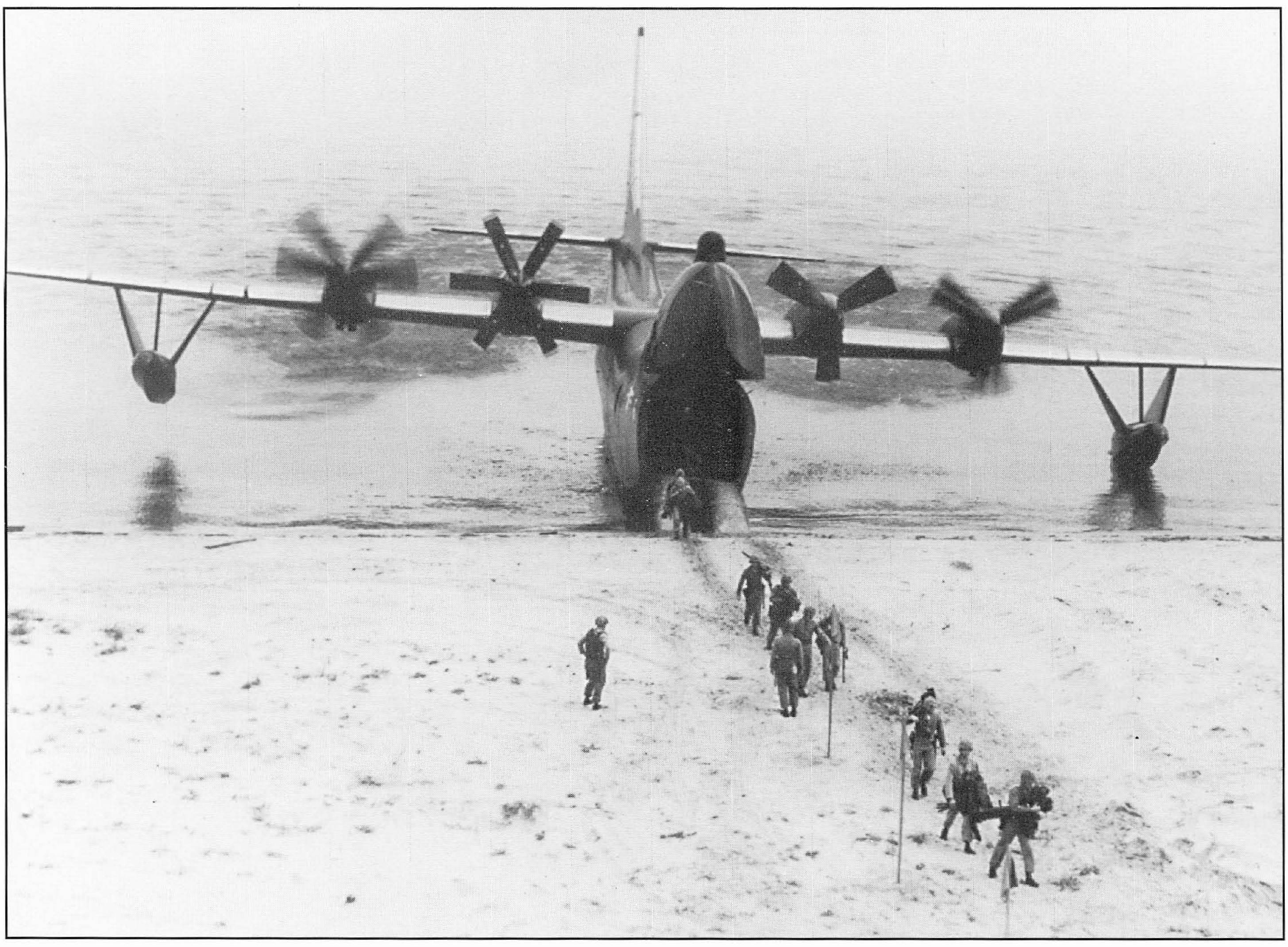


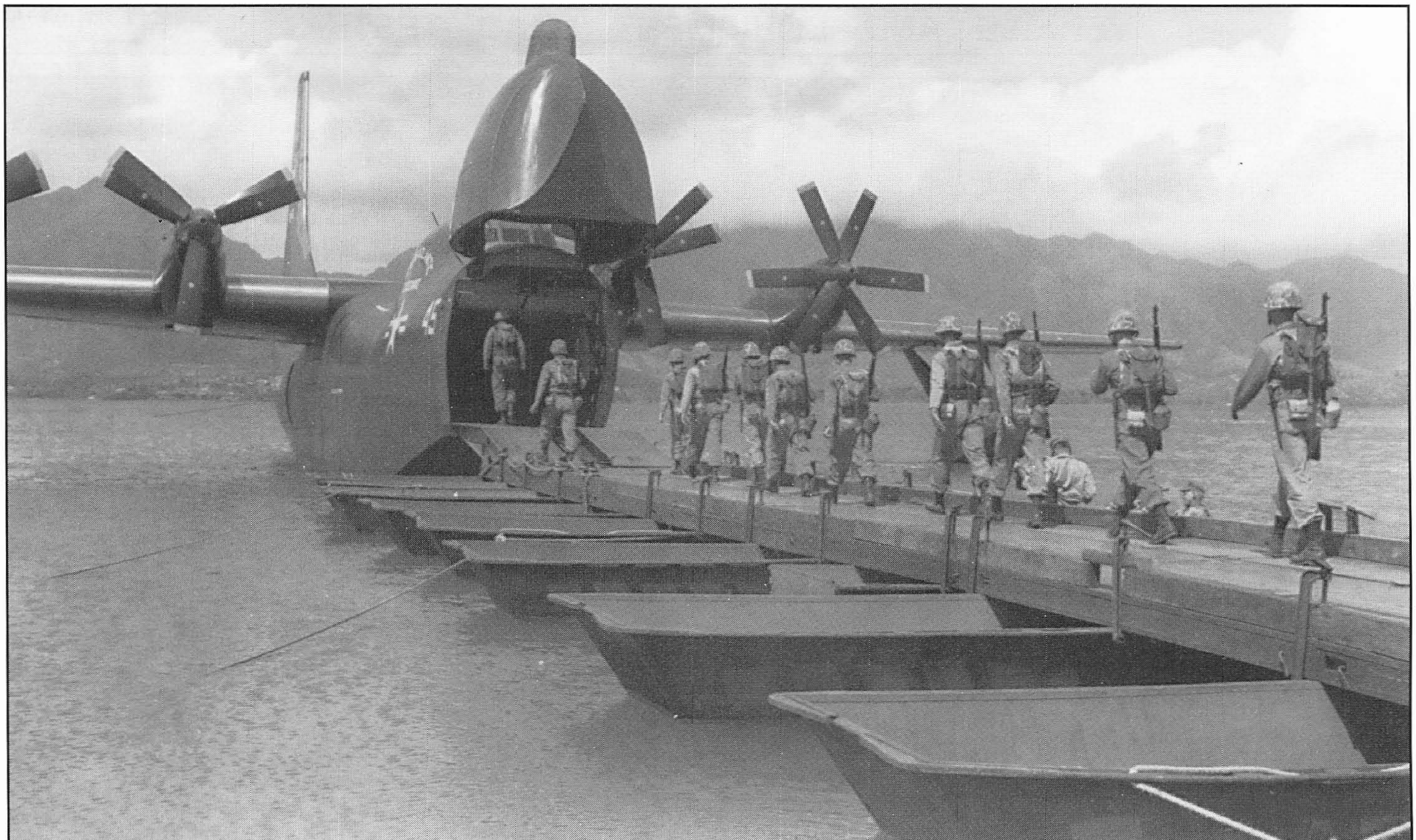
At left top, view looking up into the open R3Y-2 bow. (via Combat Models) At left bottom, bow ramp testing of the first R3Y-2 prior to engine installation. (SDAM) On this page, US Marines simulate a landing from the first R3Y-2 in San Diego Bay. (SDAM)



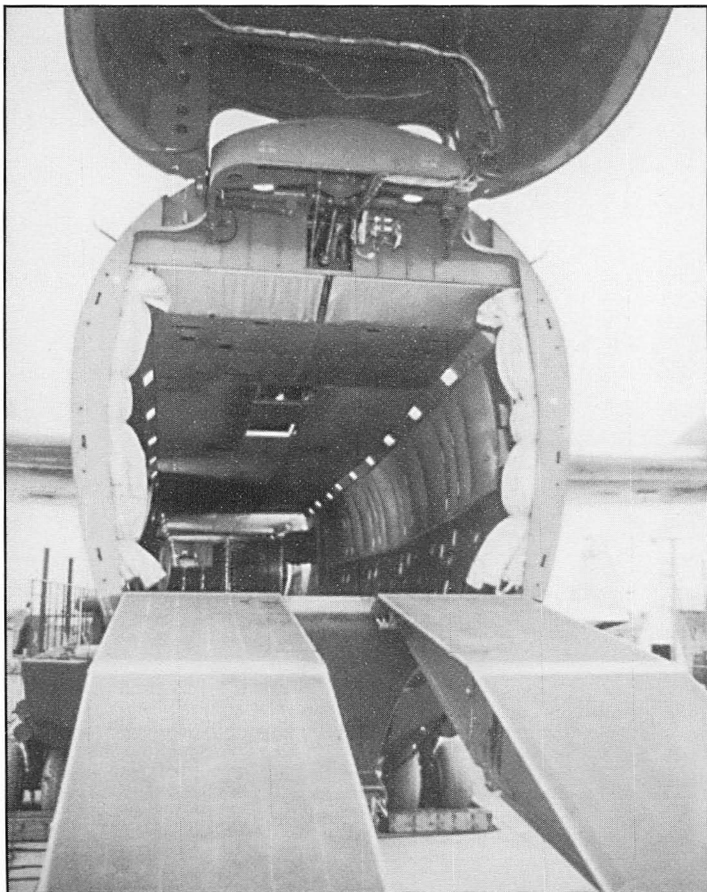
AMPHIBIOUS LANDING TRIALS

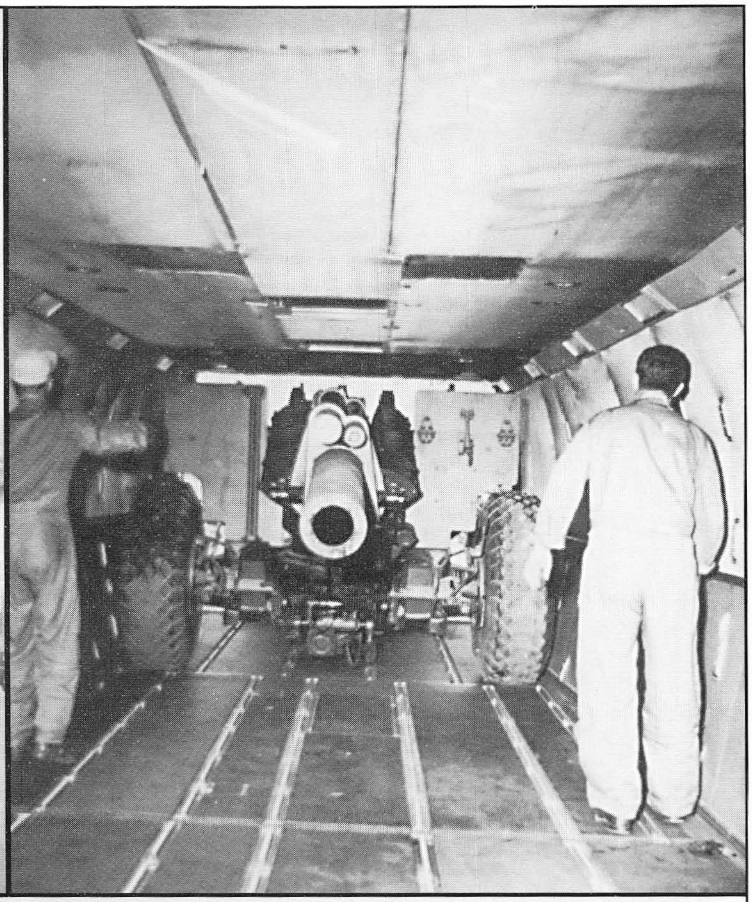
Amphibious landing tests were conducted at San Diego with Marines from nearby Camp Pendelton. Although the photos are impressive, it was extremely difficult to maintain station during the procedure and sometimes even more difficult to back off the beach when the unloading was completed. On all attempts, the inboard engines would be shut down during unloading operations. (Hoffman & Nat. Ar.) Above right, on 21 April 1957, the South Atlantic Tradewind landed at MCAS Kaneohe Bay for a ten-day familiarization period with the 1st Marine Brigade. Seen here disgorging Marines onto a pontoon pier, 128450 was under the command of LCDR E. G. Calles from Alameda-based VR-2. (USMC)





VEHICLE AND EQUIPMENT LOAD TESTING





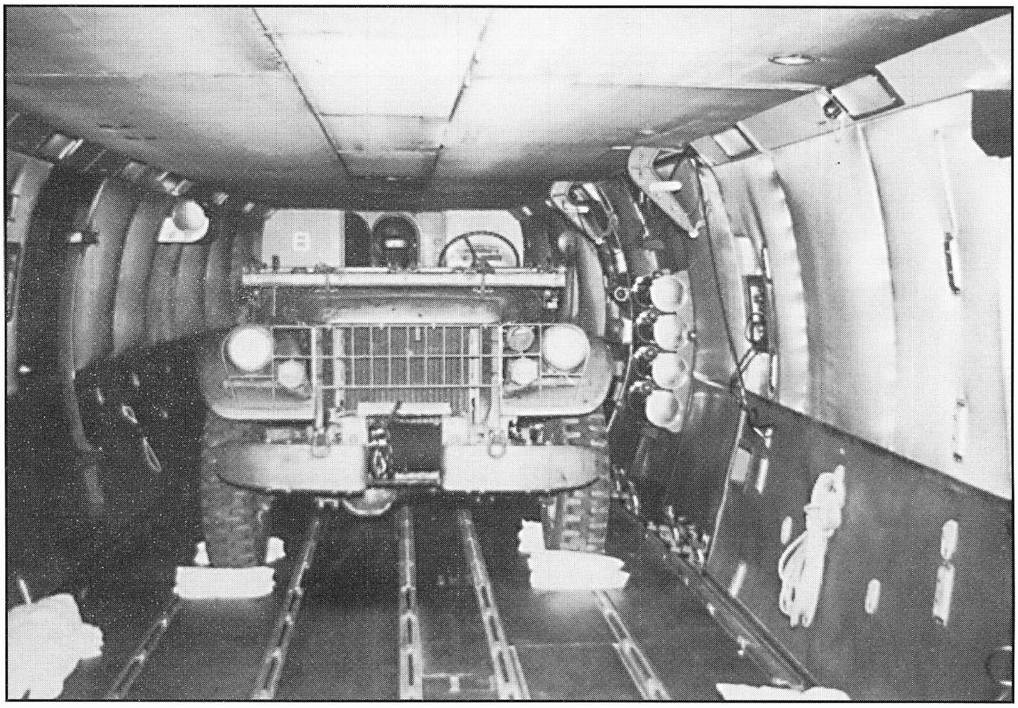
At far left, close-up of ramps and empty cargo bay of the R3Y-2. (SDAM)

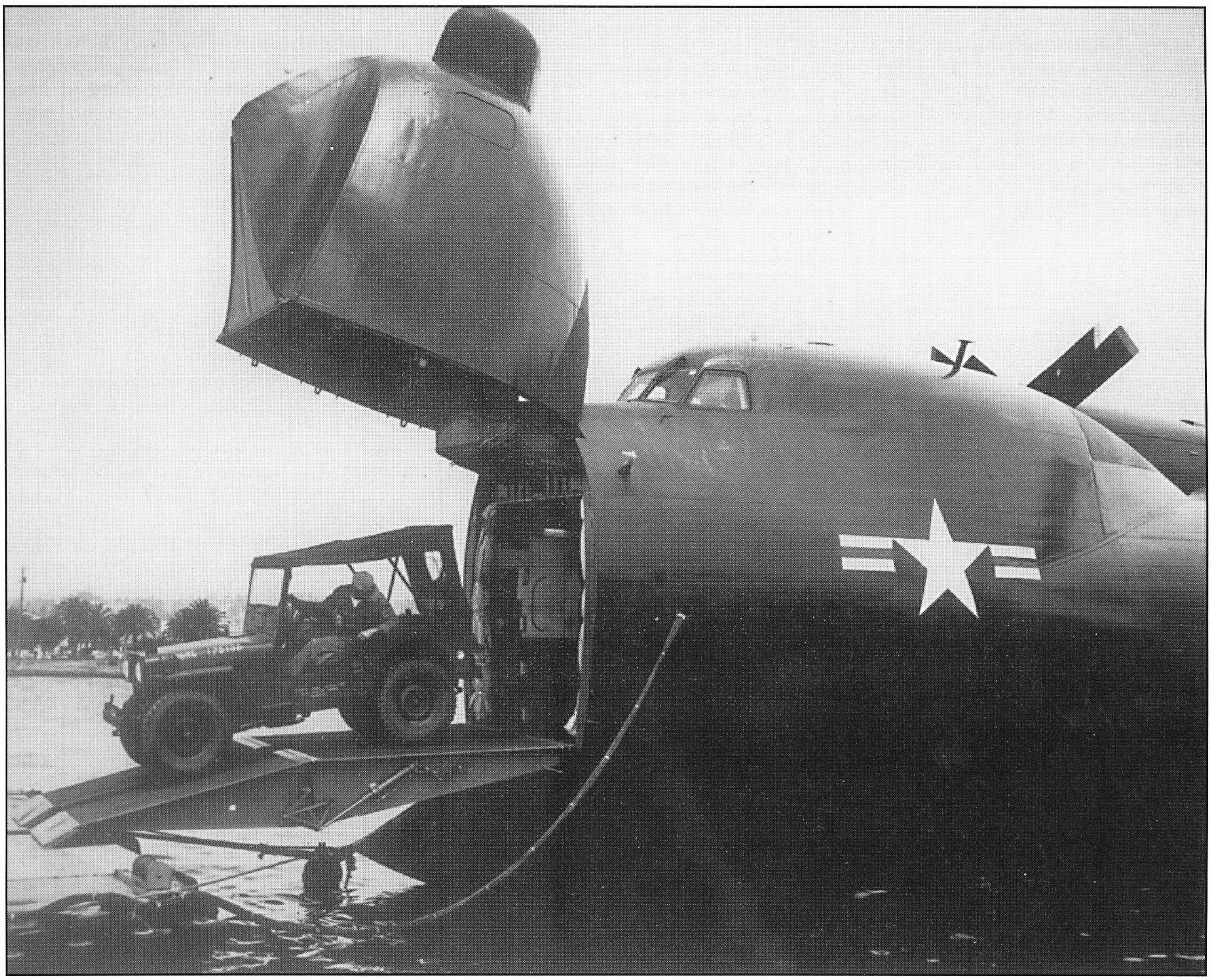
At left, a 105mm gun being positioned. (SDAM)

At right, with a 105mm gun attached, this Marine light truck fits handily inside the R3Y-2. (SDAM)

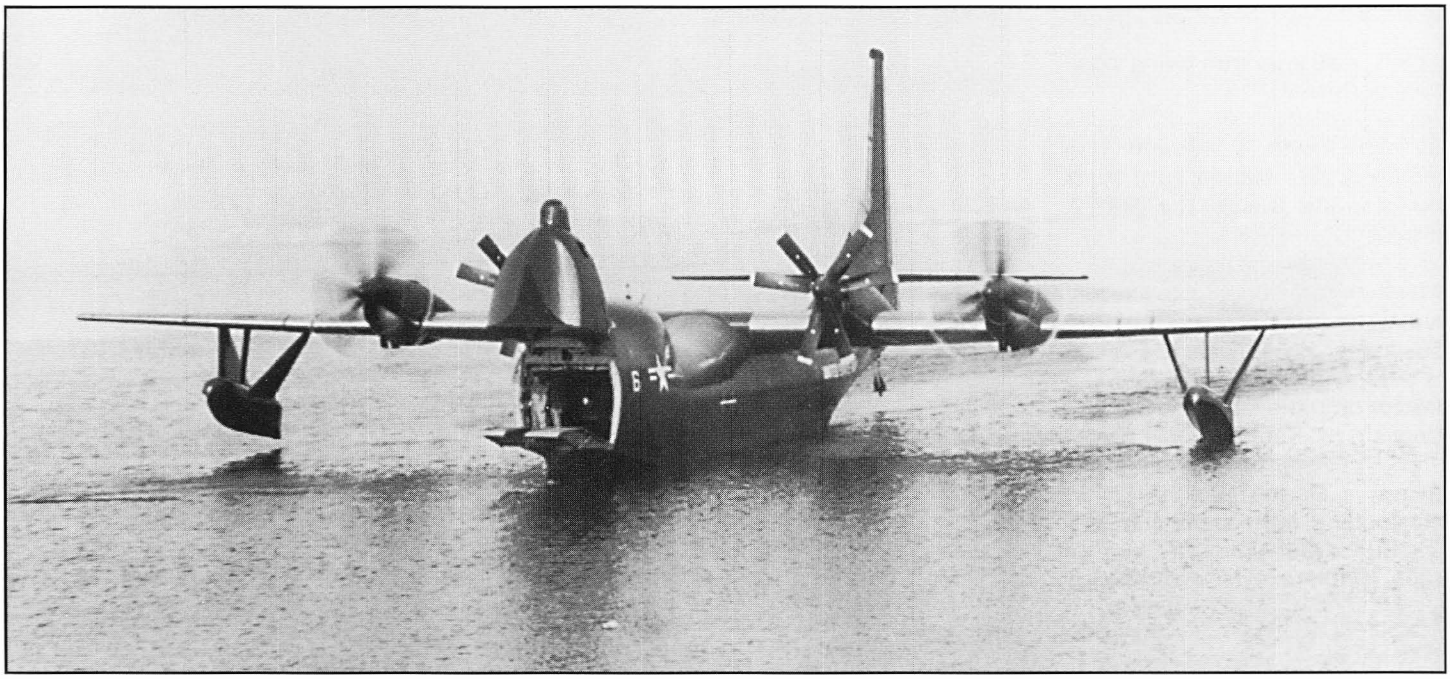
At left below, with a Convair boat aiding in maintaining the first bowloader on station, the R3Y-2 is seen unloading a Marine mule tractor onto the seaplane ramp at Convair. (R. Koehnen)

Below, a Marine jeep backs up the loading ramps and into the waiting Tradewind in August 1954. (National Archives)





BEACHING TESTS OF THE R3Y-2 ASSAULT TRANSPORT

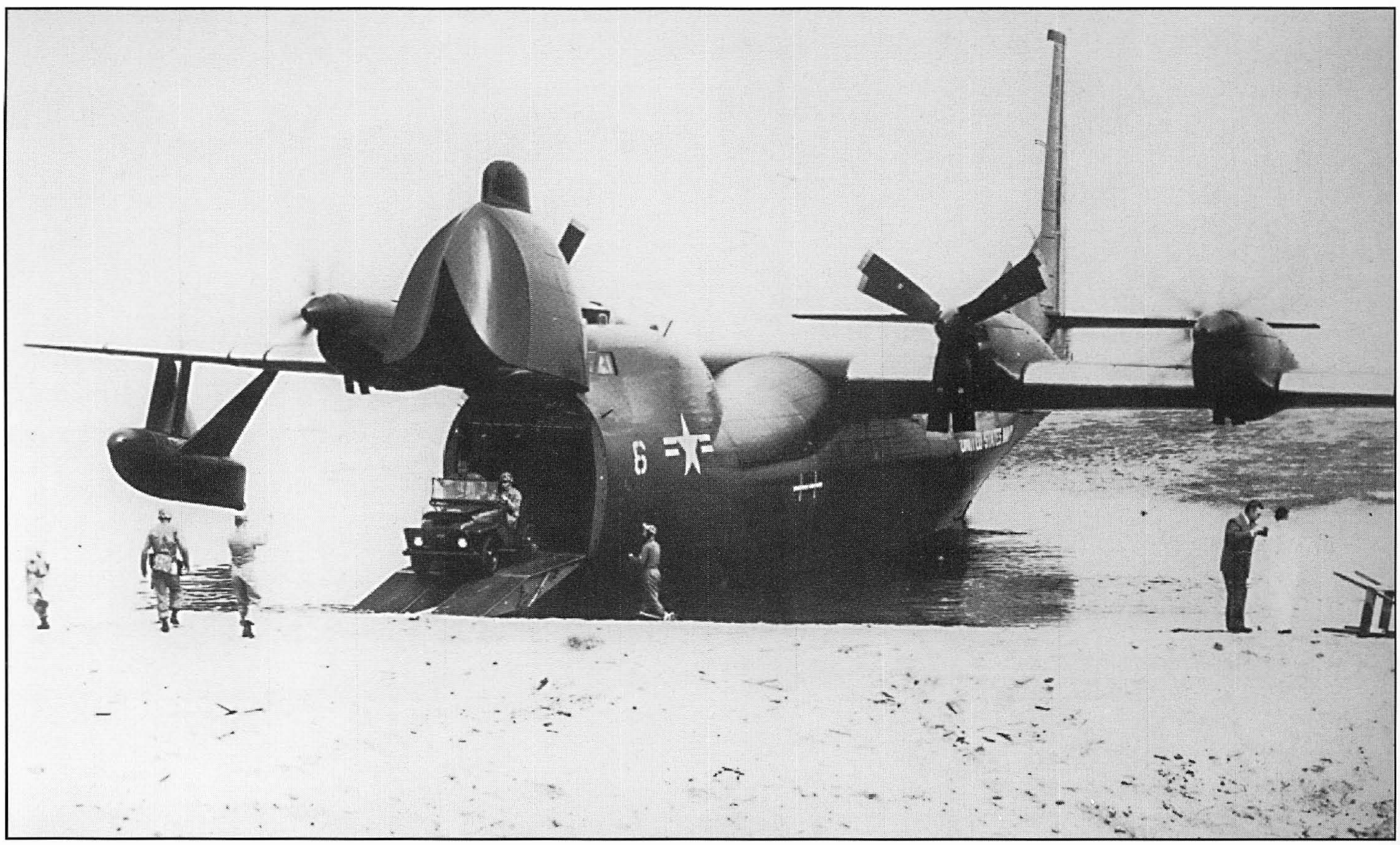


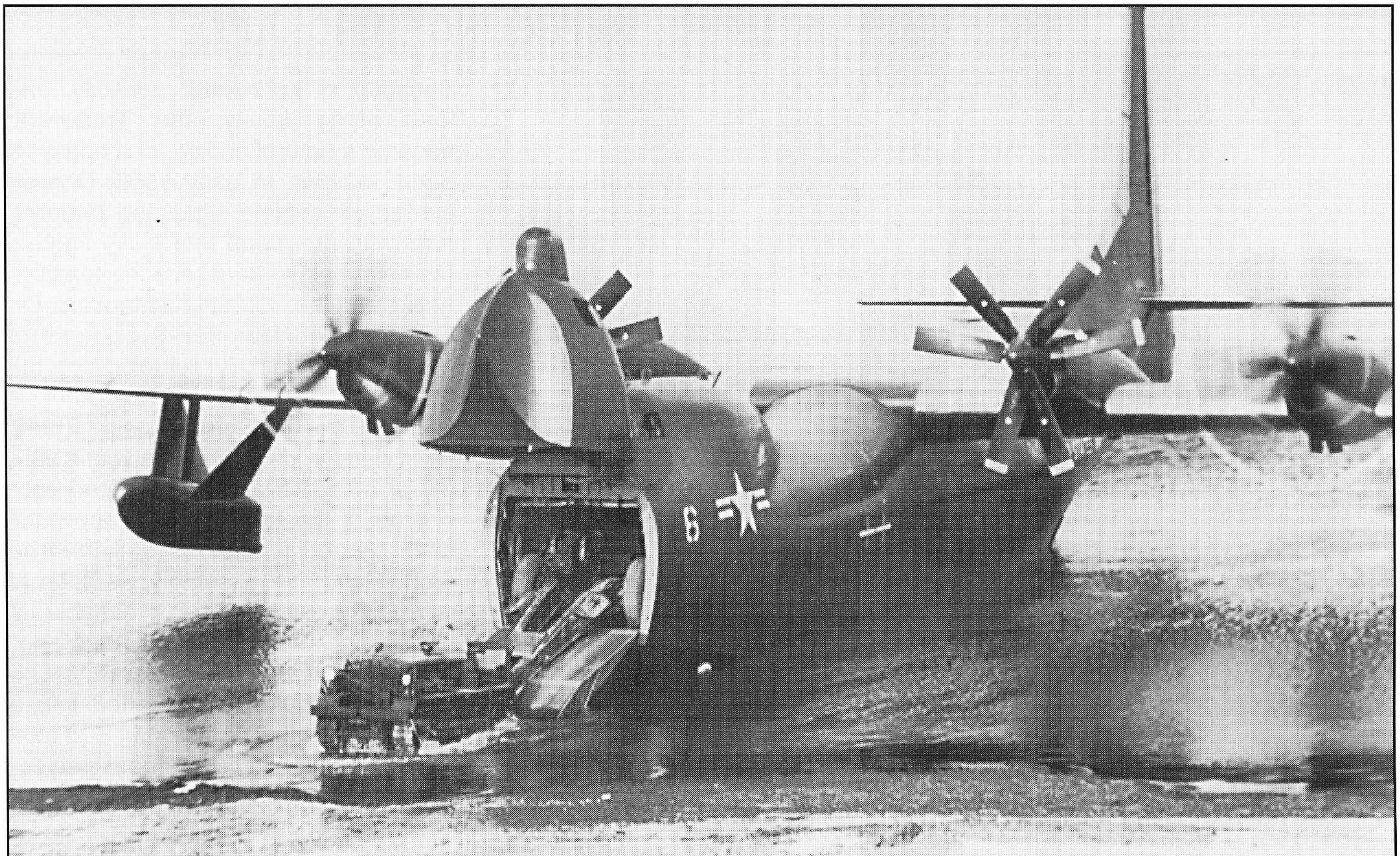
Above, the first R3Y-2 bowloader taxies up to a sandy San Diego area beach to unload its cargo of a mechanical mule and a 105mm gun. The bow is fully raised and the ramps halfway extended in preparation for beaching. Note the inboard engines have been shut down. (Combat Models)

Below, a jeep is unloaded onto the beach during another test. (National Archives)

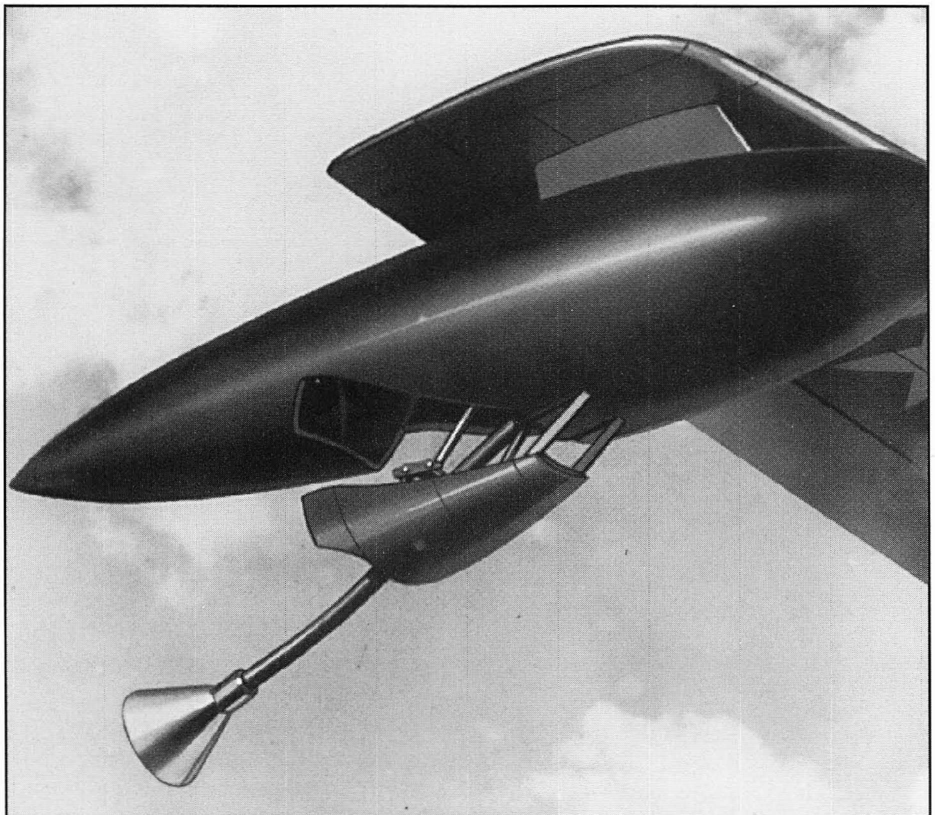
At right bottom, the landing site seen from above. Note the open astro hatch on the upper fuselage aft of the flight deck. (Combat Models)

At right top, tractor and 105mm gun exit R3Y-2, 128450, in shallow water. These tests were conducted in sheltered water with little or no wave action. (Combat Models)



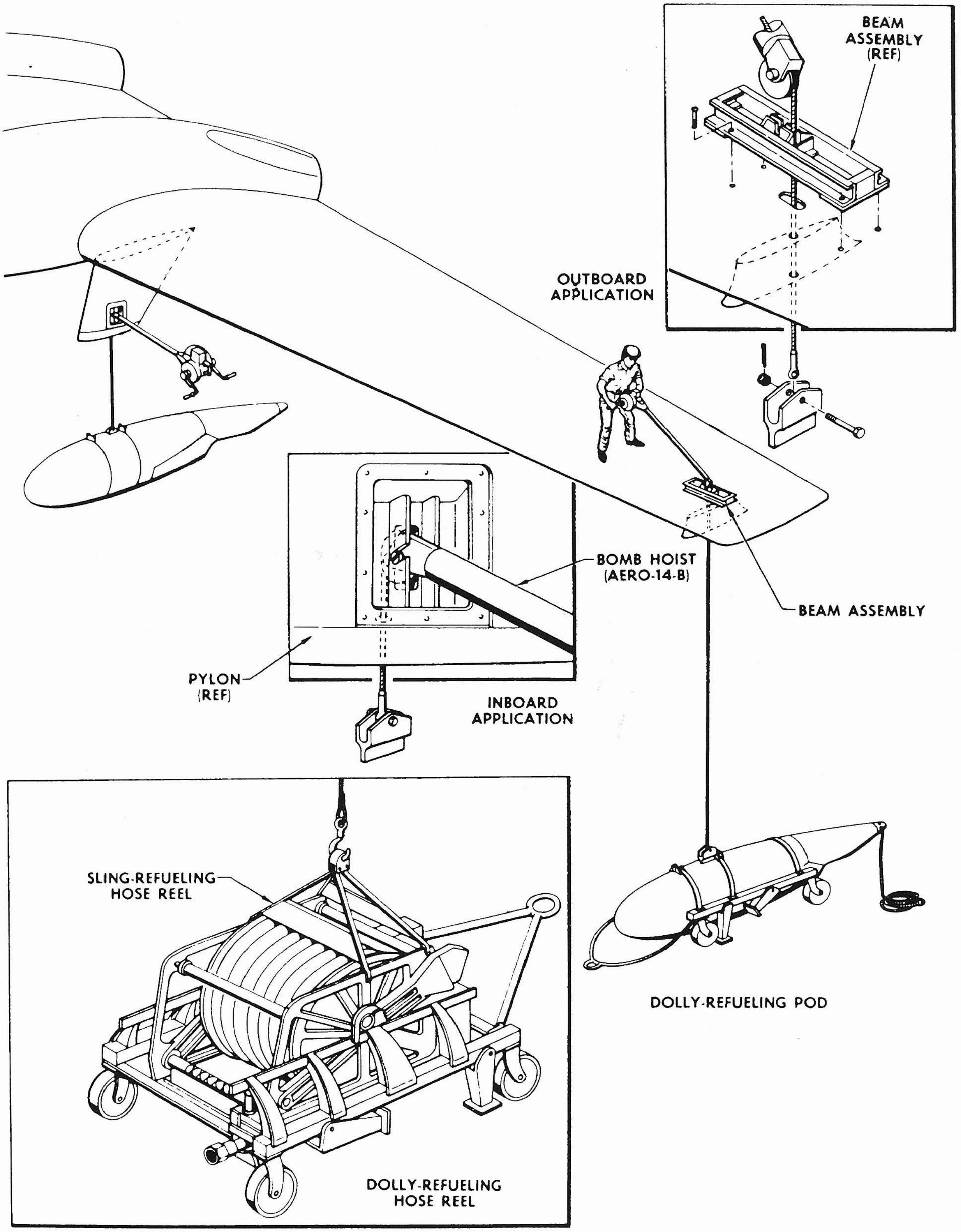


R3Y TRADEWIND INFLIGHT REFUELING AIRCRAFT



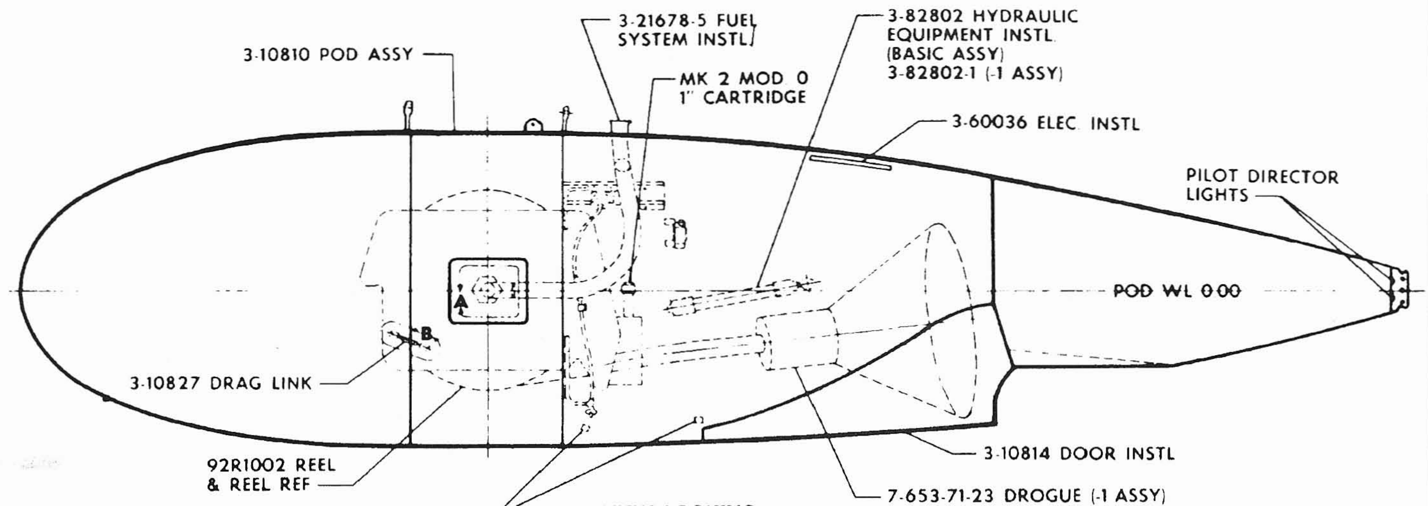
Because of its speed, capacity, and load lifting ability, the Tradewind became a natural choice for a heavy lift aerial refueler. In early 1956, Convair started conducting simulated refueling runs with groups of four Navy fighters (as seen below) to assess the feasibility of using the R3Y fleet as tankers. On 6 September, four F9F-8 Cougars of VF-123 successfully refueled for the first time from R3Y-2, 131722, off of La Jolla off the California coast. These tests were followed by tests with a variety of other naval fighters. Upon conclusion of the testing, the Tradewinds were cleared for use as tankers. The drogue and reel assembly, as seen at left being extended, was capable of transferring 250 gallons of fuel per minute to waiting aircraft. The Tradewind could be converted into a tanker in less than five hours. The total weight of all the inflight refueling equipment was about 1,000 pounds.

R3Y INFLIGHT REFUELING GROUND SUPPORT EQUIPMENT

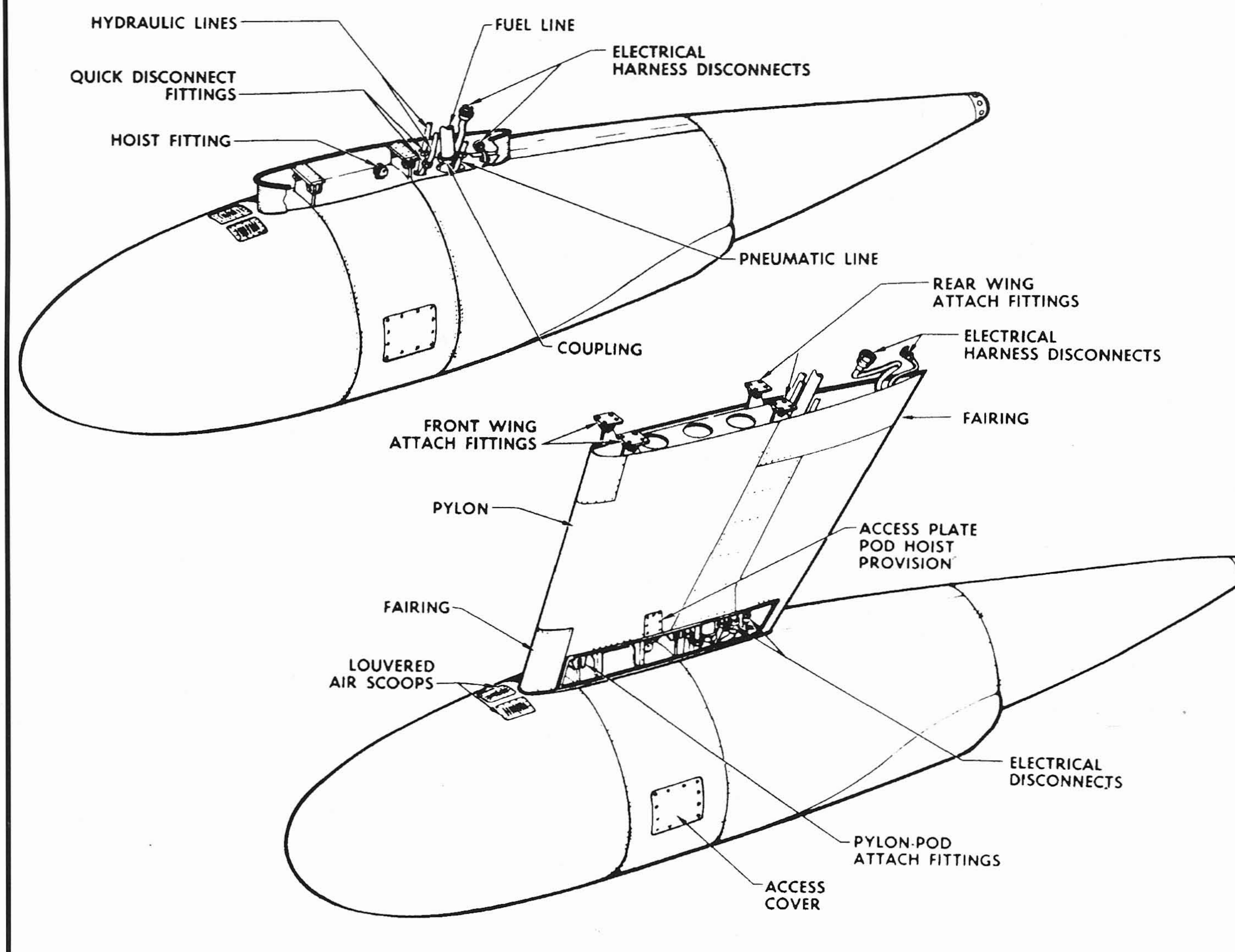


Ground Support Equipment

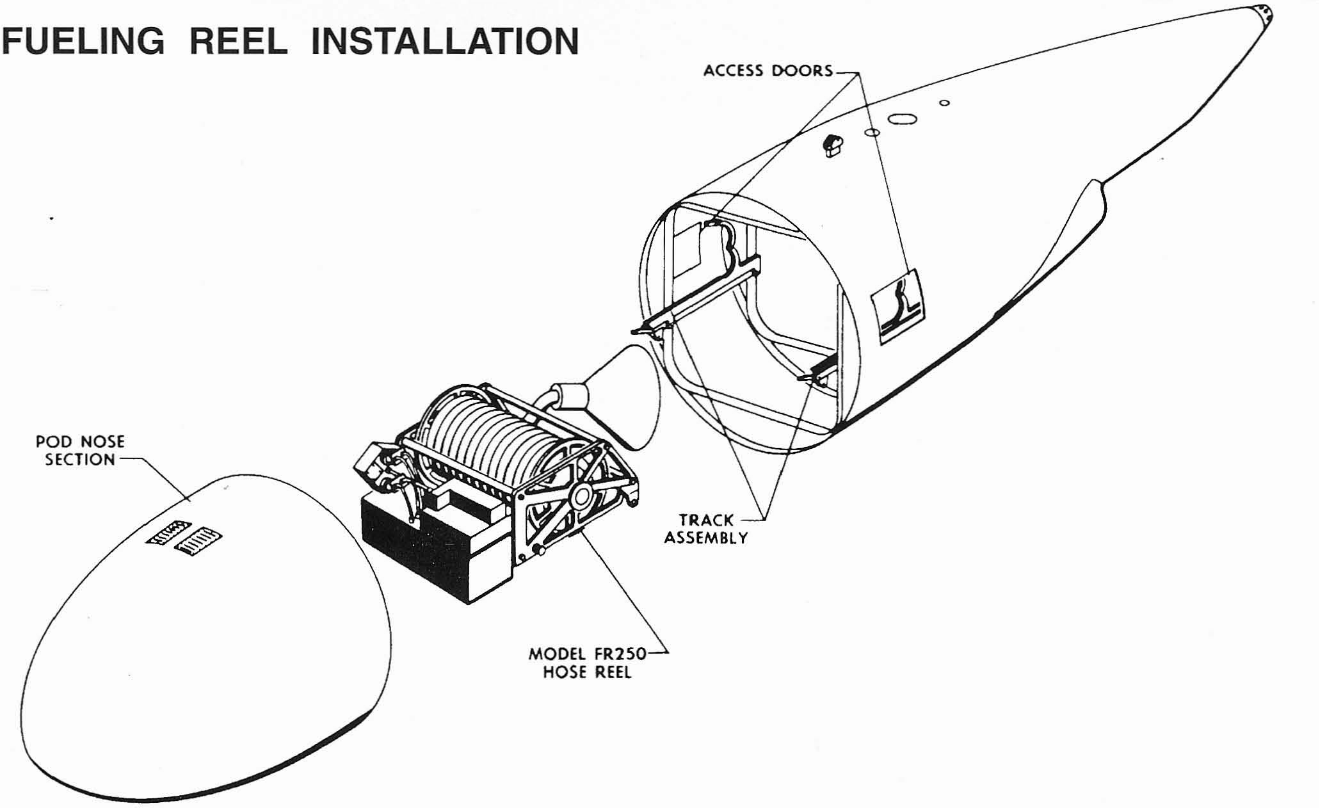
INFLIGHT REFUELING PODS



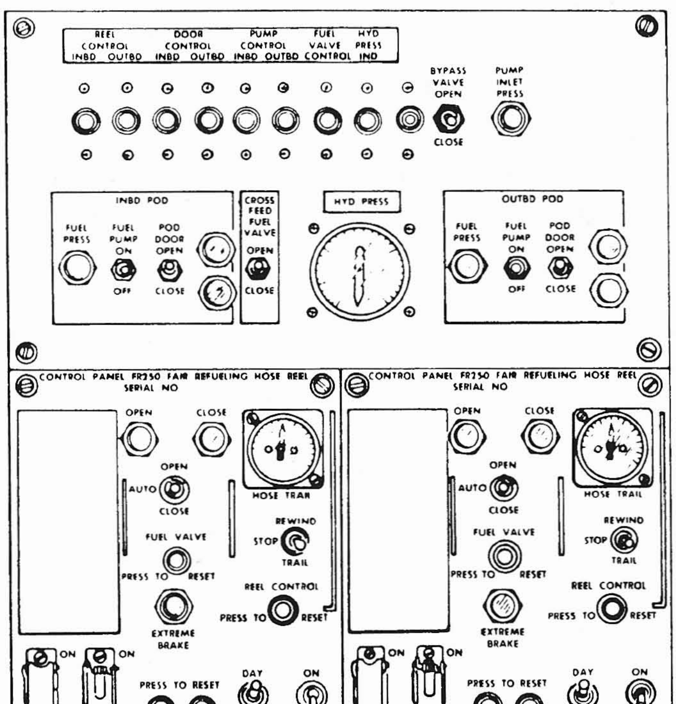
VIEW LOOKING INBOARD L.H. SIDE

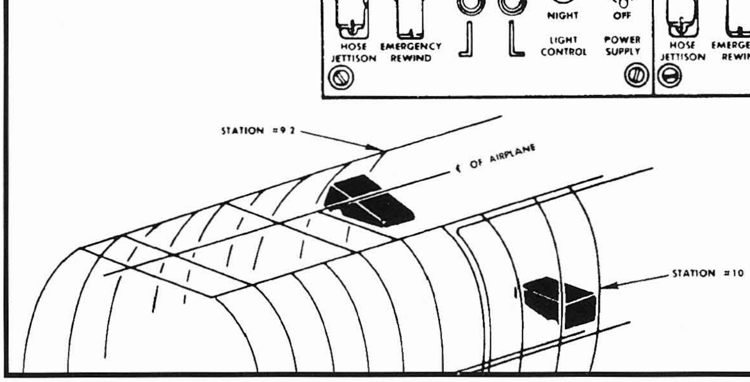


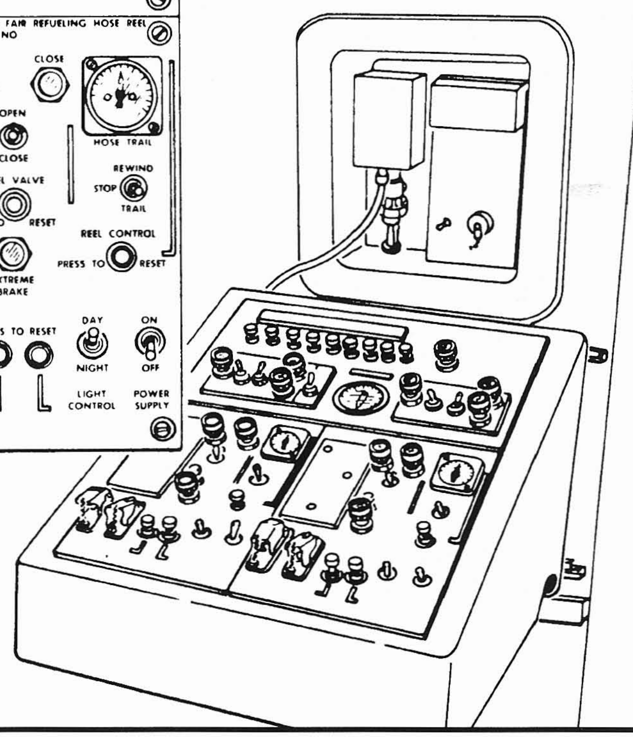
REFUELING REEL INSTALLATION



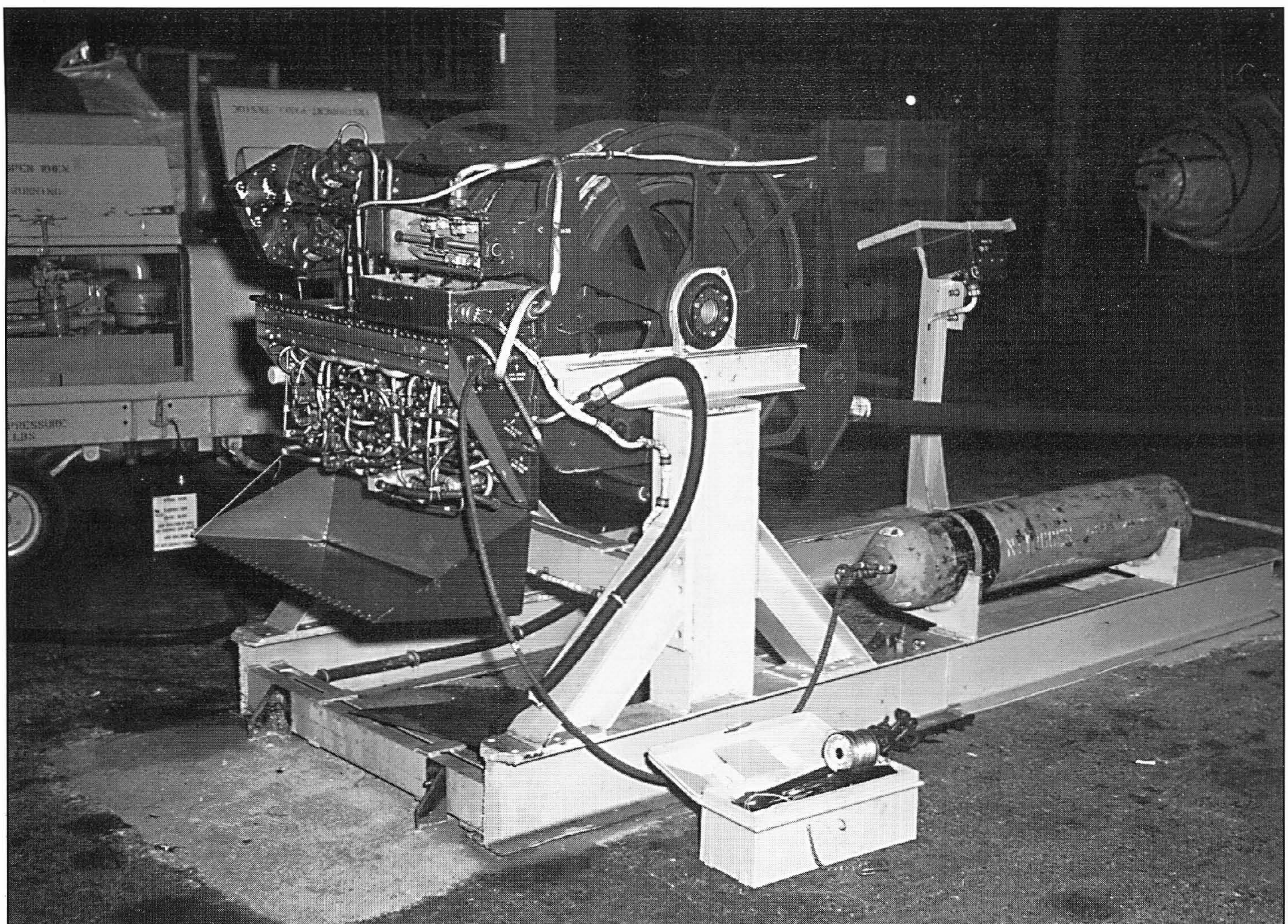
REFUELING OPERATOR'S CONTROL PANEL



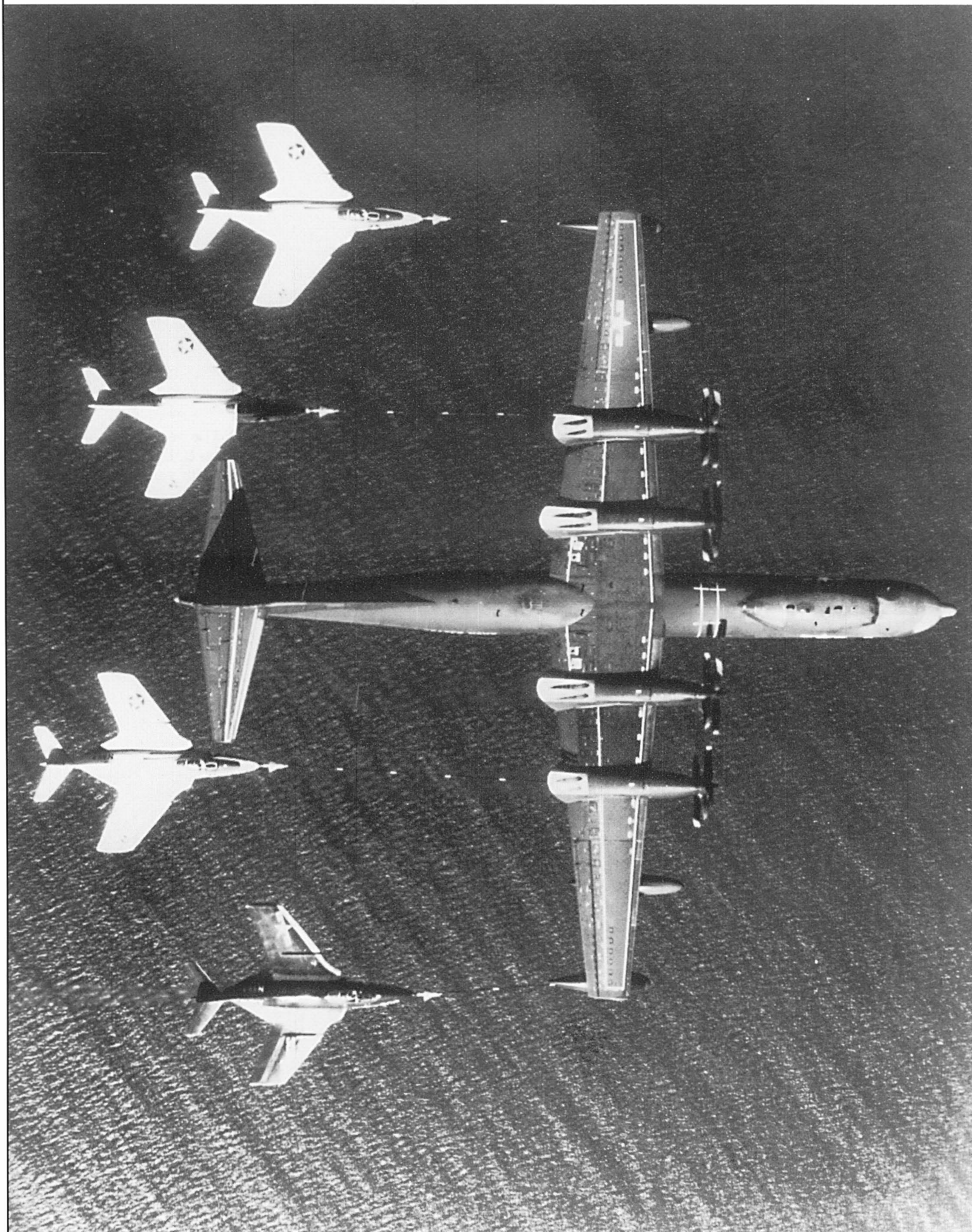


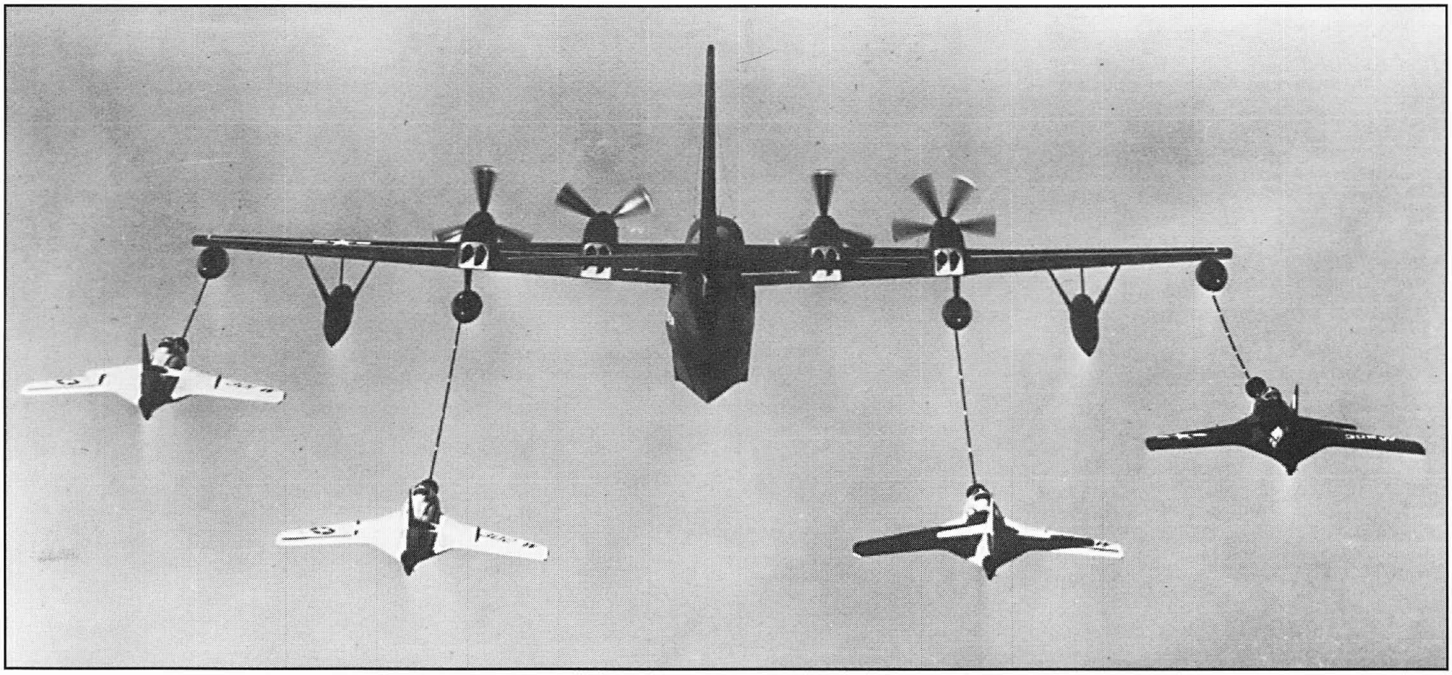


Above, refueling equipment and pod storage area at the Honolulu International Airport, Oahu, Territory of Hawaii, on 11 February 1958. (USN) Below, drogue and reel assembly being evaluated on a test stand at the Honolulu Airport. (USN via R. Koehnen) At right, during the first live fuel transfer test, 4 VF-123 Cougars are refueled at the same time from R3Y-2, 131722.

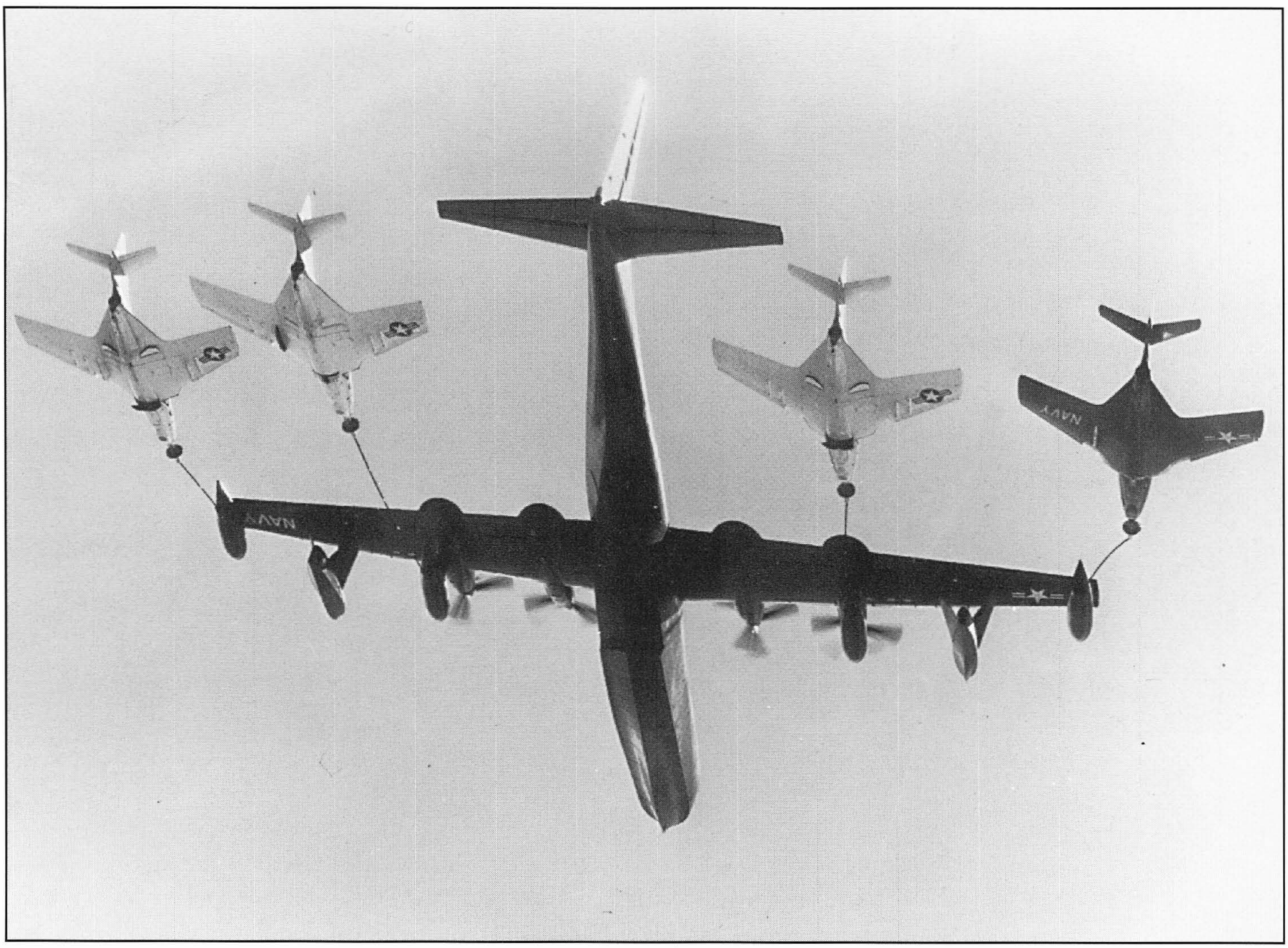


R3Y-2 AERIAL TANKER





Four views of the first actual refueling session, 6 September 1956, with four aircraft from VF-123. The separation between the four relatively small Cougars is adequate, but leaves little room for maneuvering in turbulence. The Cougars have their belly speed brakes extended during the operation. The Tradewind was a very stable refueling platform, with very little induced turbulence because of the counter-rotating propellers. (National Archives)

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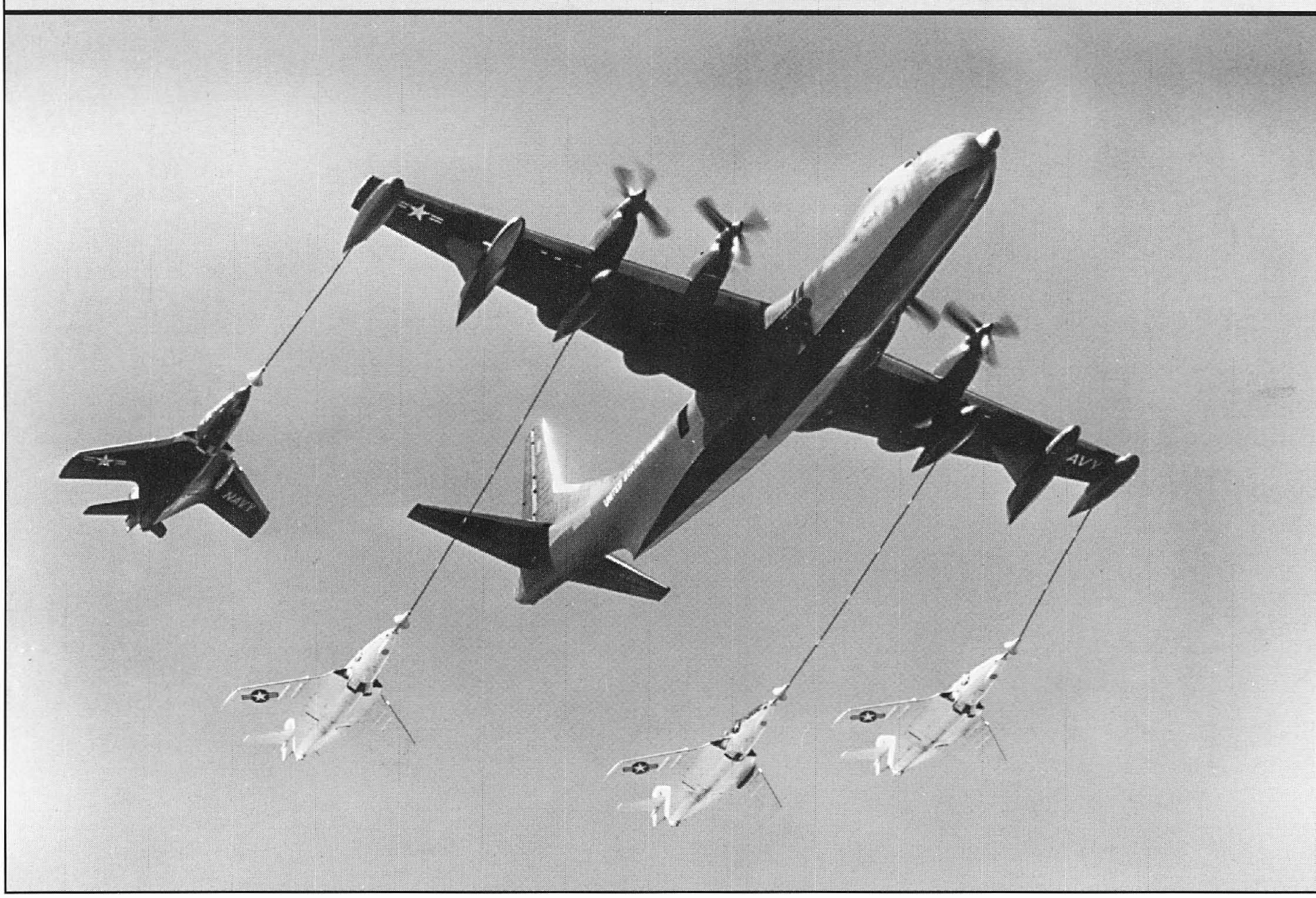
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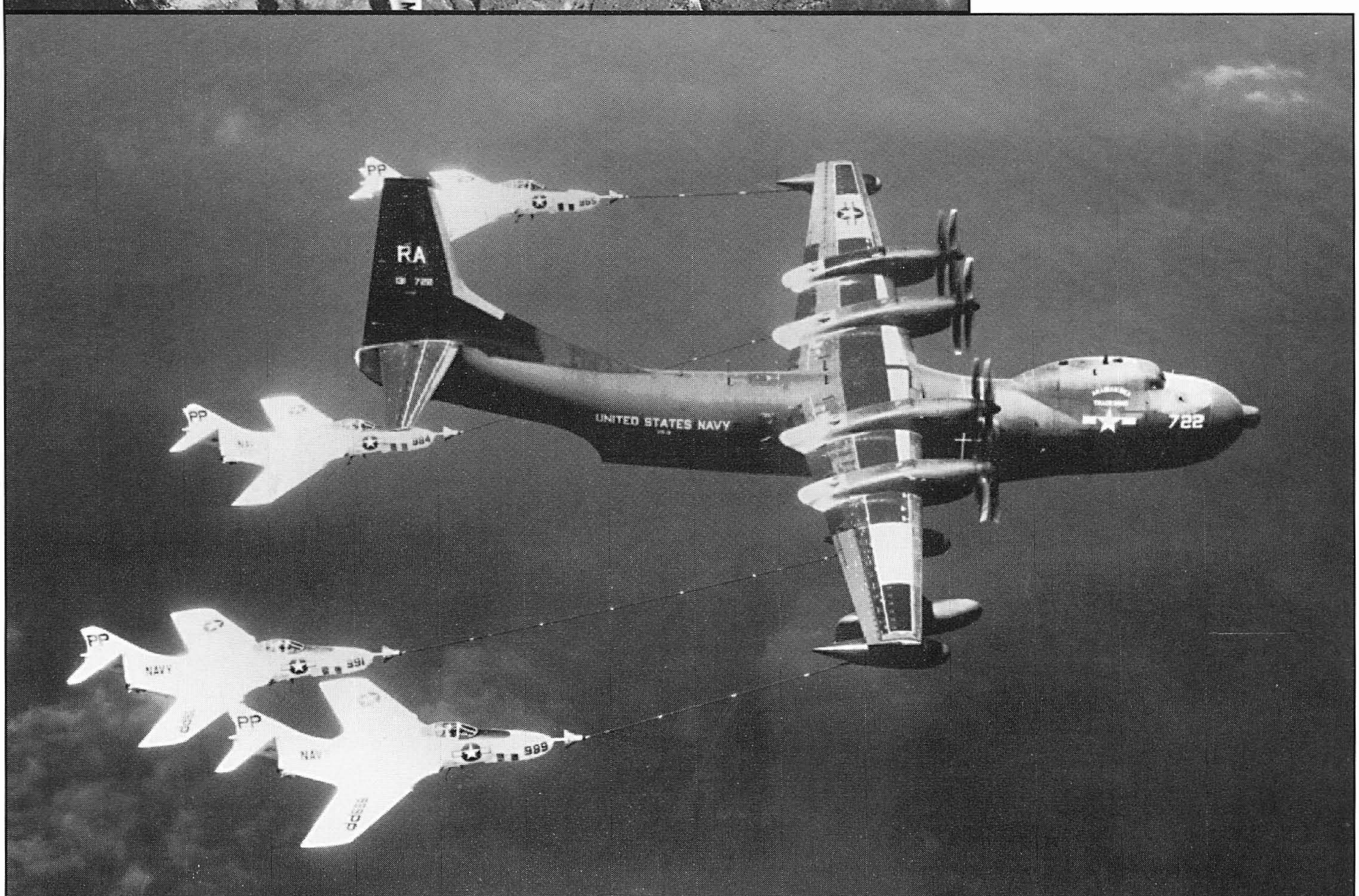
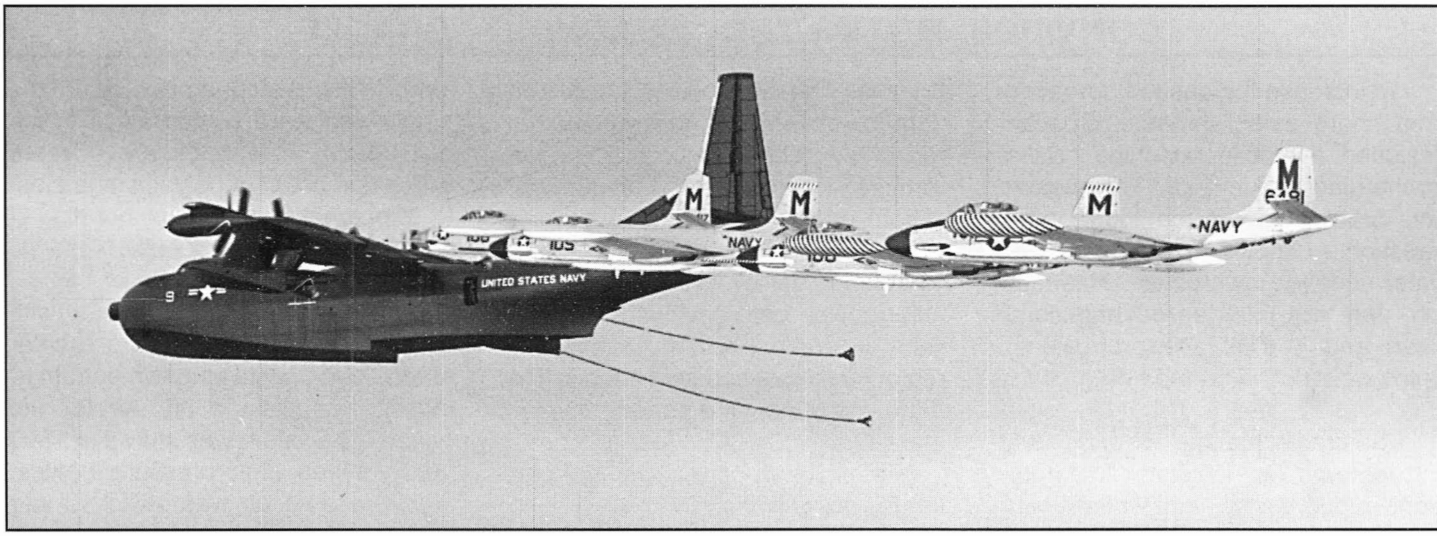
TURBO TANKER THE FLYING GAS STATION

At left, three Banshees refueling from the Arabian Sea Tradewind over California's mountains. (SDAM) Below, R3Y-2, 131722, the Arabian Sea Tradewind, refuels four VFP-61 F9F-8P photo Cougars off the California coast. (USN via Lawson) At right top, four VF-23 Banjos form up alongside of R3Y-2, 131722, prior to refueling. (SDAM) At right middle, R3Y-2, 131722, refuels two VF-23 F2H-3 Banshees while a third flys in formation. (National Archives) At right bottom, R3Y-2, 131723, the Caribbean Tradewind, off Catalina Island on 17 December 1957, while refueling F9F-8P Cougars. (Clay Jansson)

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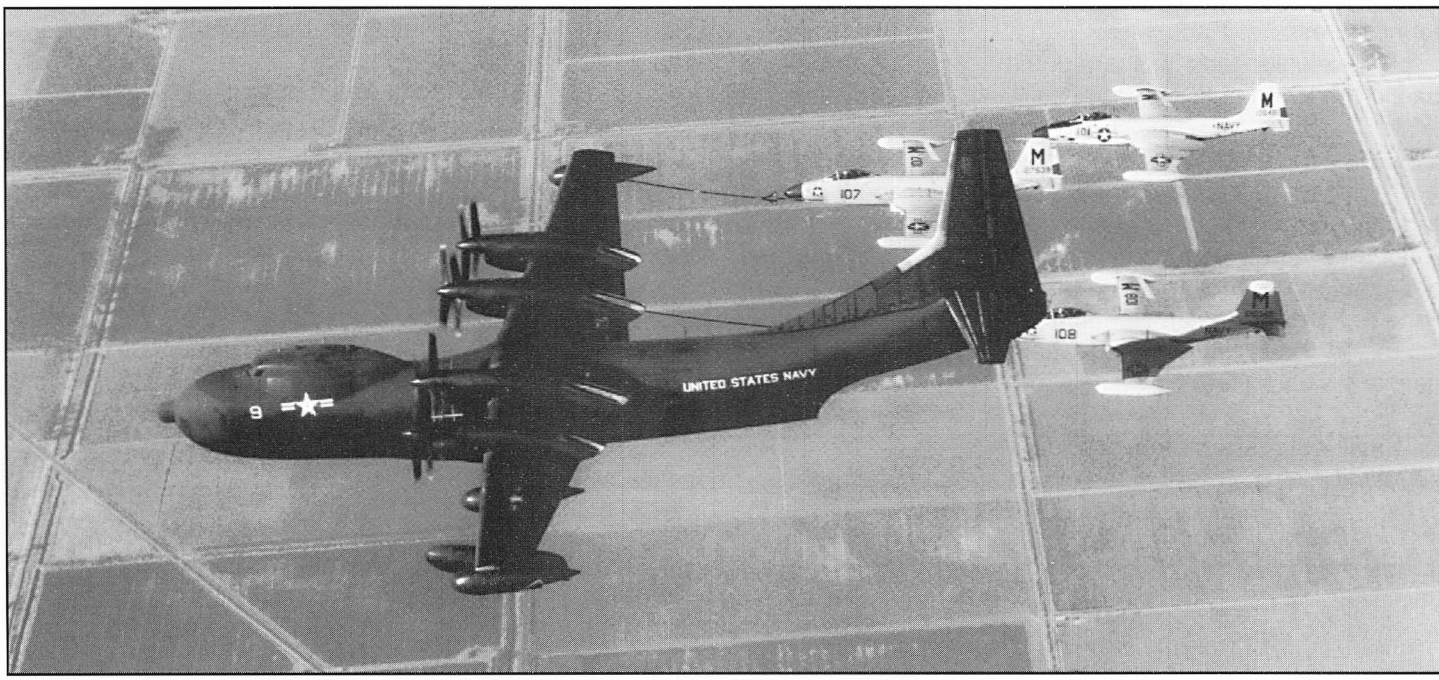
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CONVAIRS MOTORIZED BEACHING CRADLE

To increase the ease of operating from shore establishments, Convair designed a mobile beaching cradle for the giant Tradewinds. The removable cradle allowed the four-engine transport to motor in or out of the water under its own power. This feature left the hull aerodynamically clean and free of any protrusions, which would have created drag.

The cradle was built of aluminum and featured two long, box-like pontoons supported by eight wheels, two on each corner. The heavy tires were 51 inches in diameter and carried 90 pounds pressure. Each wheel had a safety disk which took its share of the load in the event of tire failure.

Wheel base of the cradle was 23 feet and the beam was 25 feet between the outside tread of the tires. Space between the pontoons was 13 feet, about one foot more than the plane at its widest point. Normal contact inside the cradle occured where the plane was 10 feet wide.

Small outboard motors would be mounted on each corner of the cradle to maneuver it when afloat without the airplane. The cradle was fitted with eight low pressure fender wheels set horizontally above the water. These permitted the plane to taxi in and out without danger of the pontoons and hull rubbing. While in the cradle, the R3Y could operate under its own propeller power, both backward and forward, on land or in water. On shore, a tractor could be used for towing in lieu of the use of airplane power.

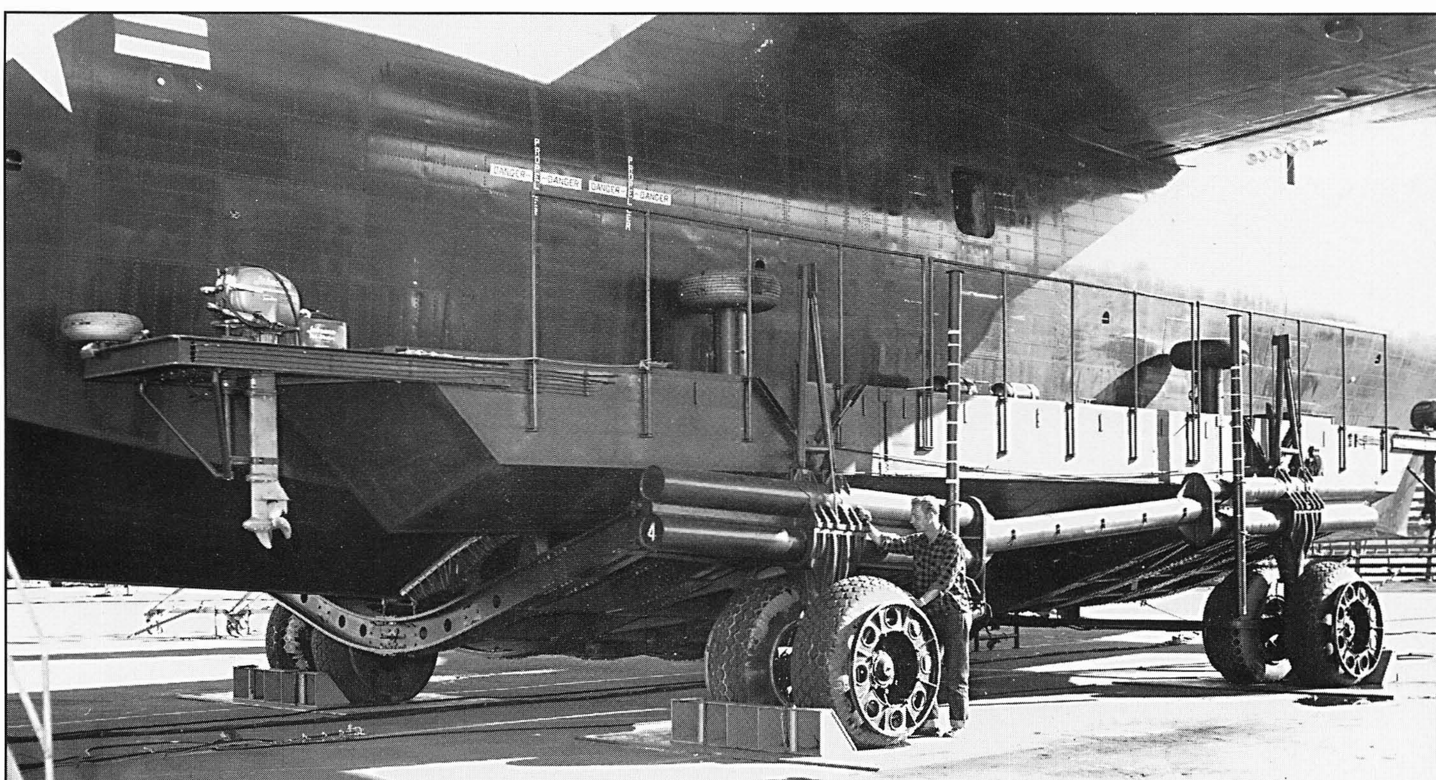
The hull was centered in the cradle by four wheels mounted with axles pointed fore and aft. They contacted and guided the hull chines onto the cradle pads. Sixteen pads supported the plane at its bulkheads, thus preventing stress on hull plates.

While the plane was being launched, full reverse thrust of all four engines (approximately 20,000 pounds) was used for braking while descending the ramp. About one third of the total available forward thrust was required for beaching the plane on a standard ramp with a 1-in-10 ratio grade.

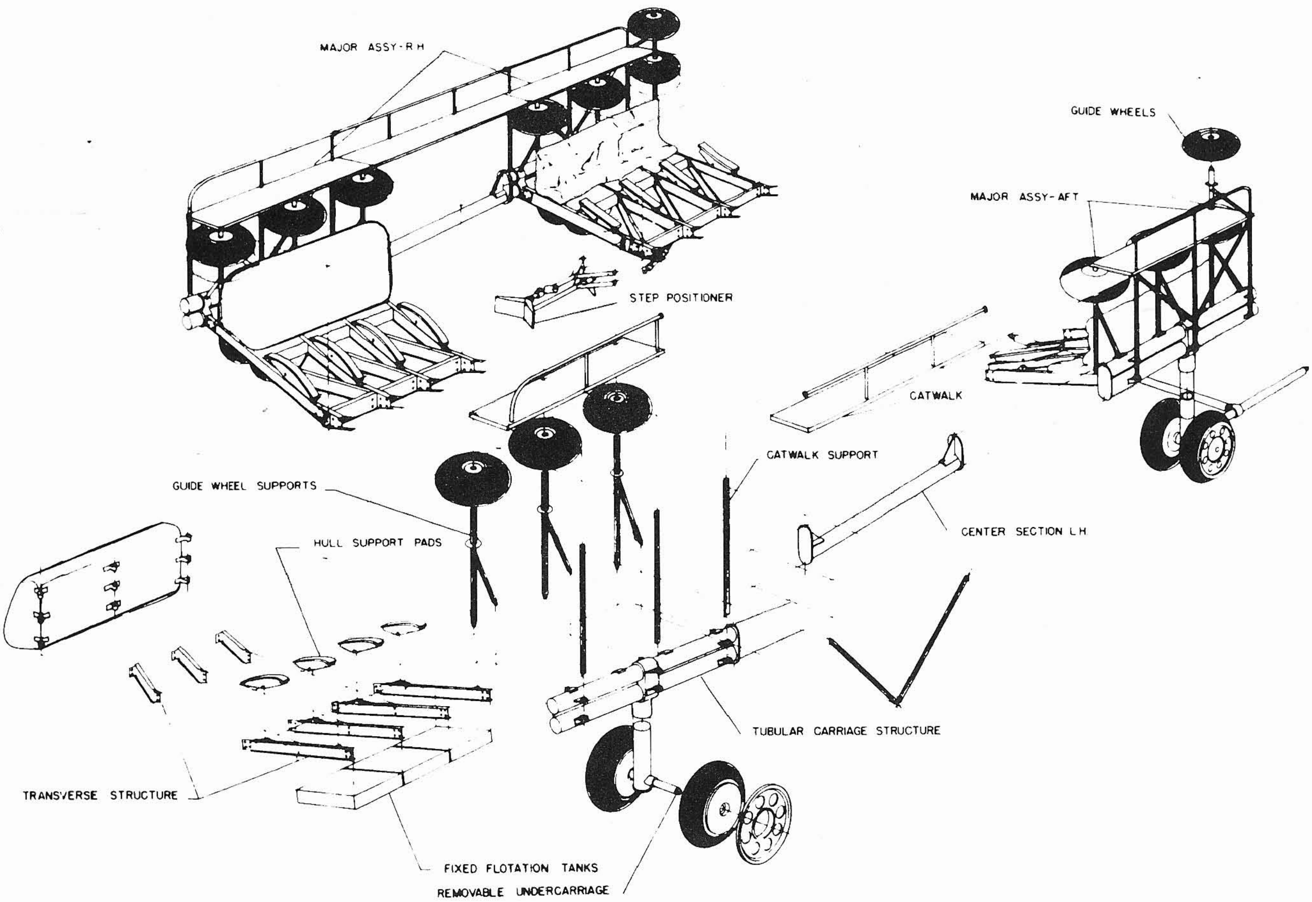
Each pad was 6 inches wide and approximately four and a half feet long. They rested crosswise in the cradle and were contoured to fit the hull bottom. The pads are covered with a thin sheet of polyethylene plastic to prevent unintentional bonding of the rubber pads to the hull.

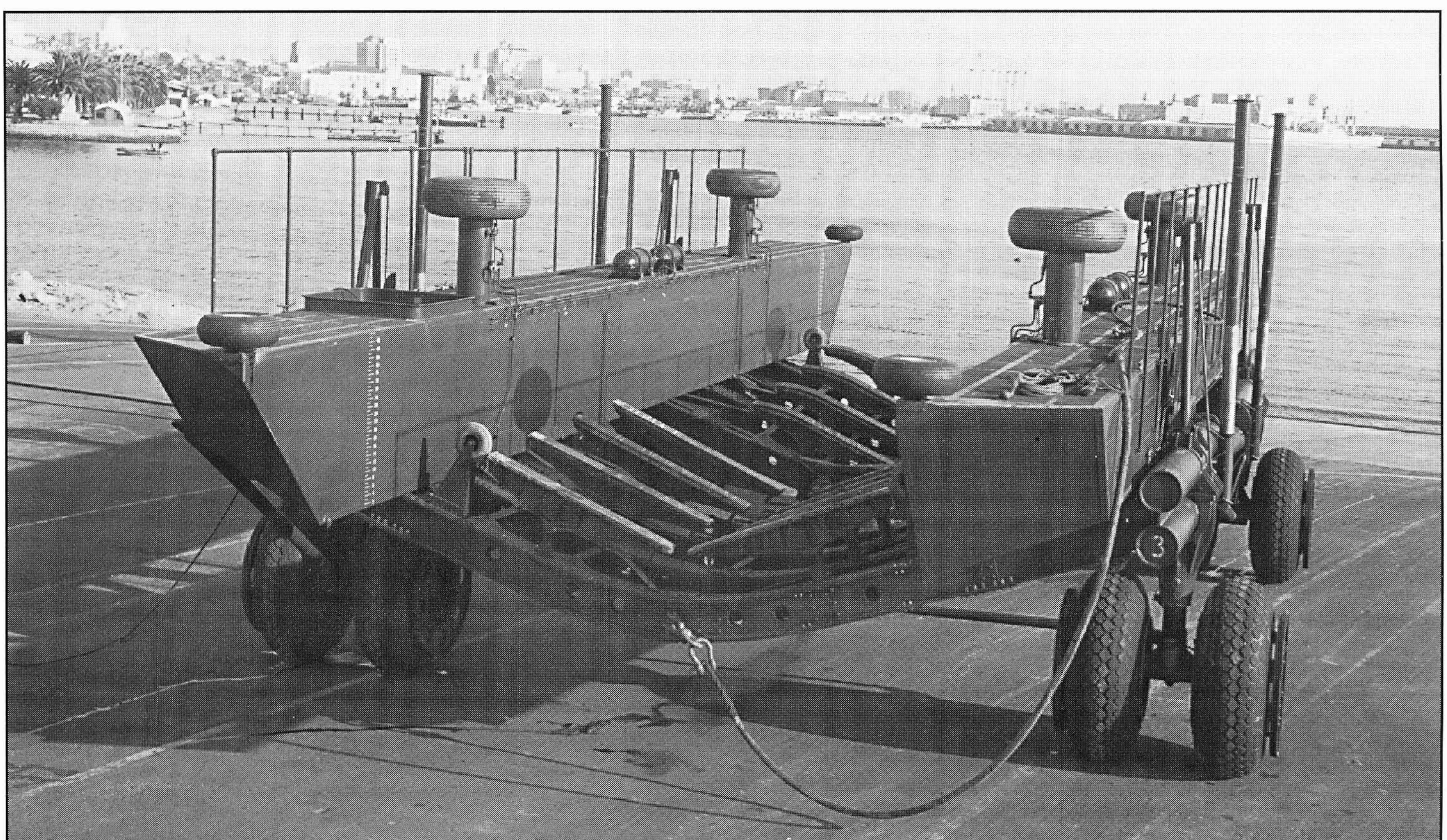
The cradle was equipped with twin hull pontoons similar to a catamaran, each containing two pneumatic pistons fore and aft. Air for the pneumatic system was stored at 1500 psi in seven high pressure bottles. High pressure air was switched into the cylinders and all four corners of the chassis were forced down and away from the plane's hull. Relative motion between the chassis and pontoons was four feet, with ample clearance thereby gained so that the plane could taxi away from the cradle.

Besides providing power for raising and lowering the chassis and pads, the pneumatic system actuate brakes on each wheel and ratchets on two wheels. The ratchets could be engaged to prevent the cradle from rolling backward or forward, depending on where such braking was needed.

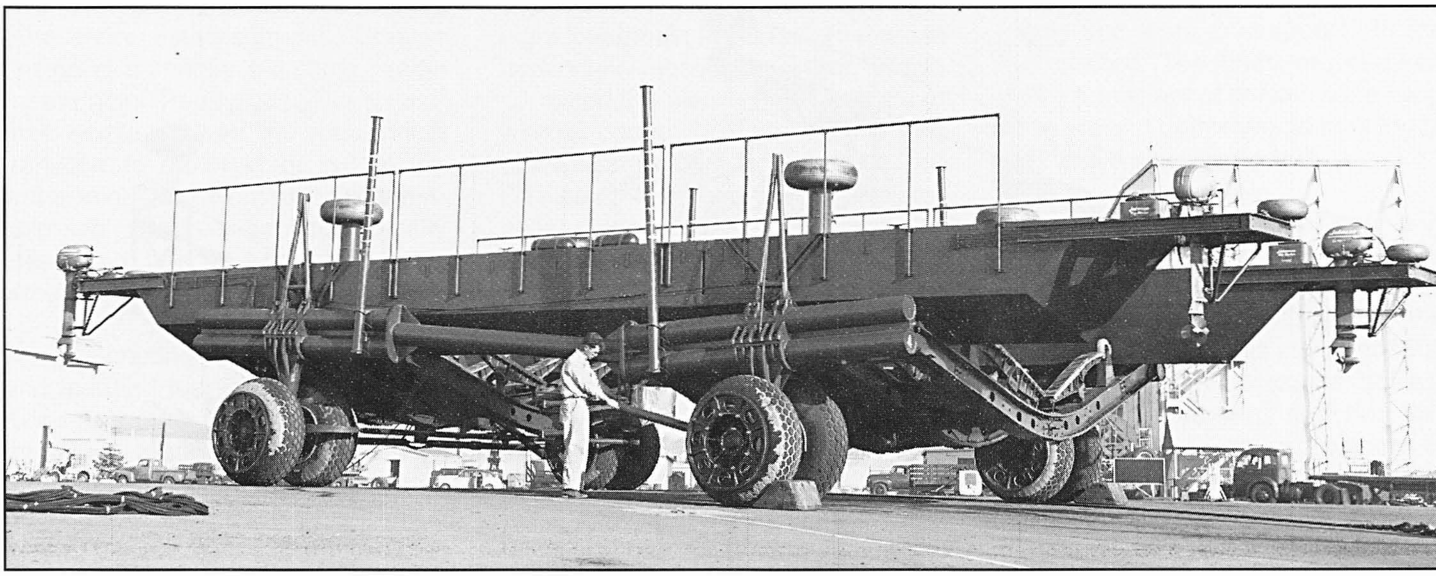


BEACHING CRADLE COMPONENTS

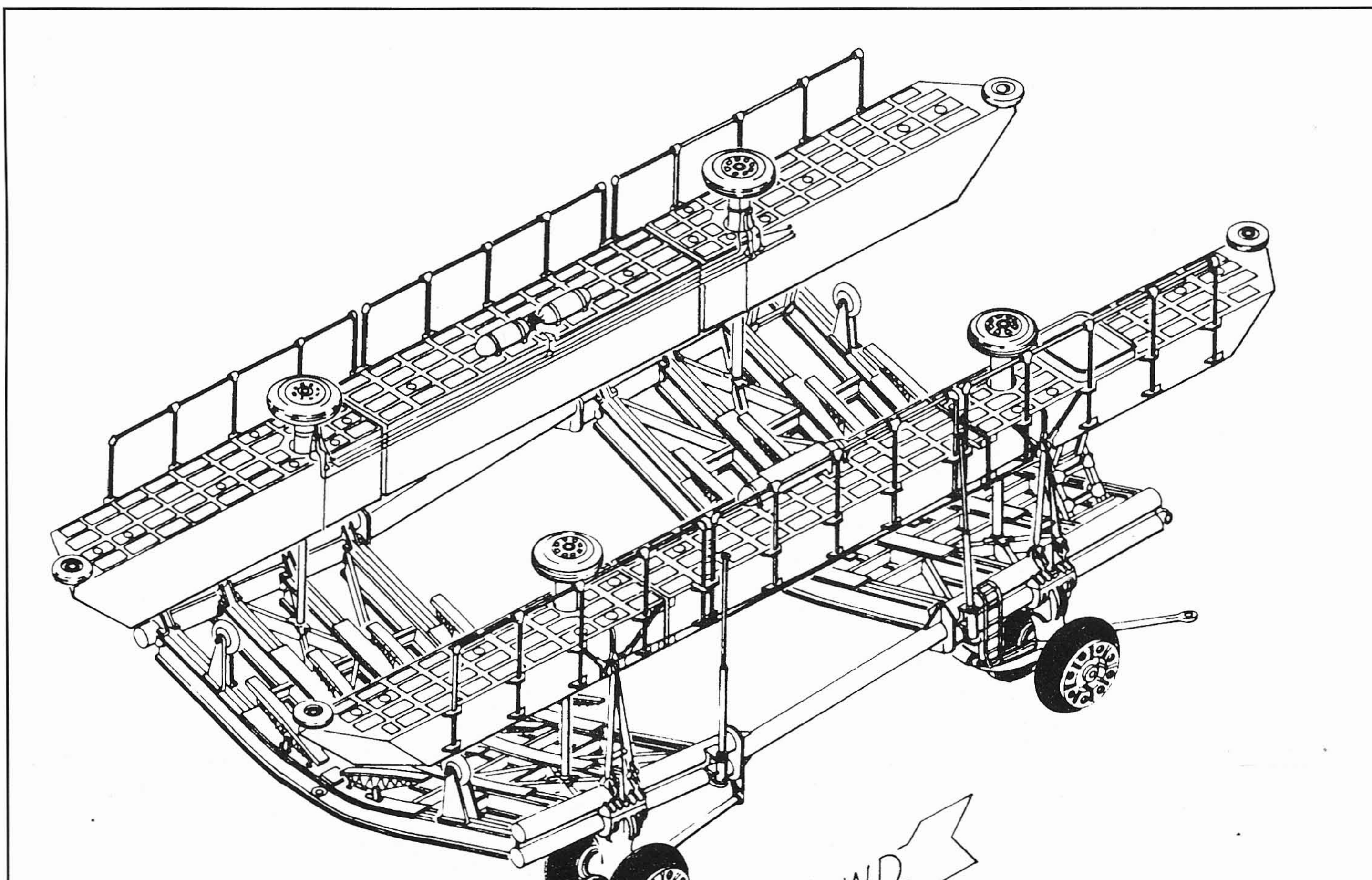




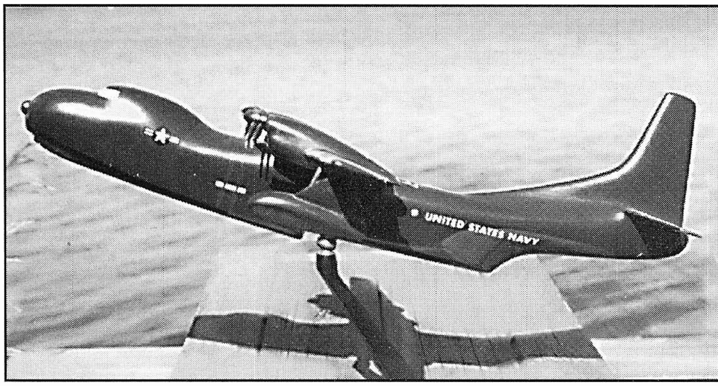
BEACHING CRADLE

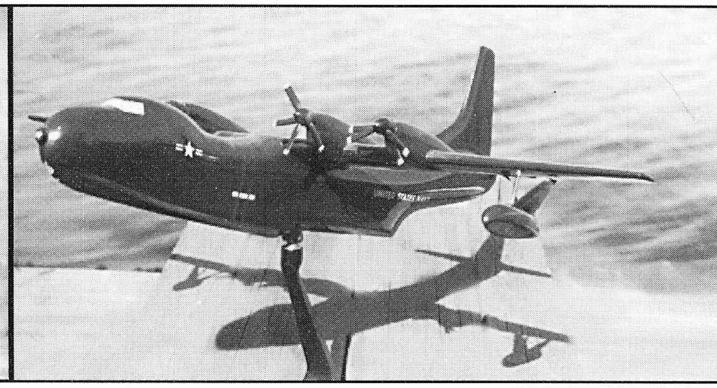


The beaching cradle was so successful that the Navy had Convair design conversions to adapt it to Martin PBM-5 Mariners and P5M-1 Marlin flying boats.



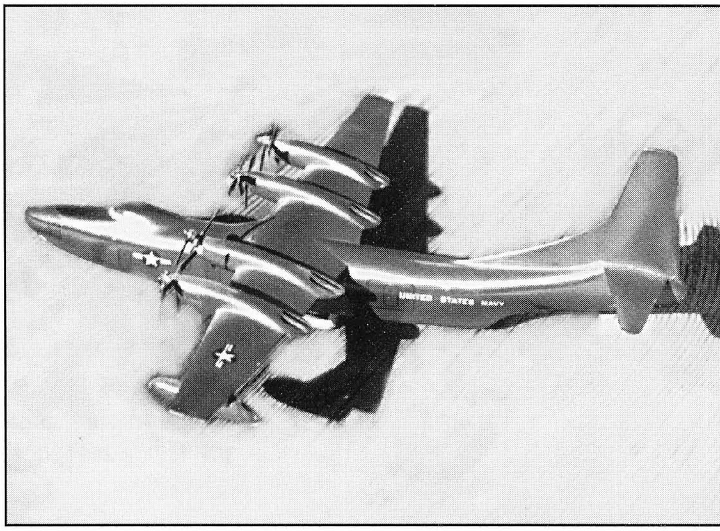
MANUFACTURER'S DISPLAY MODELS

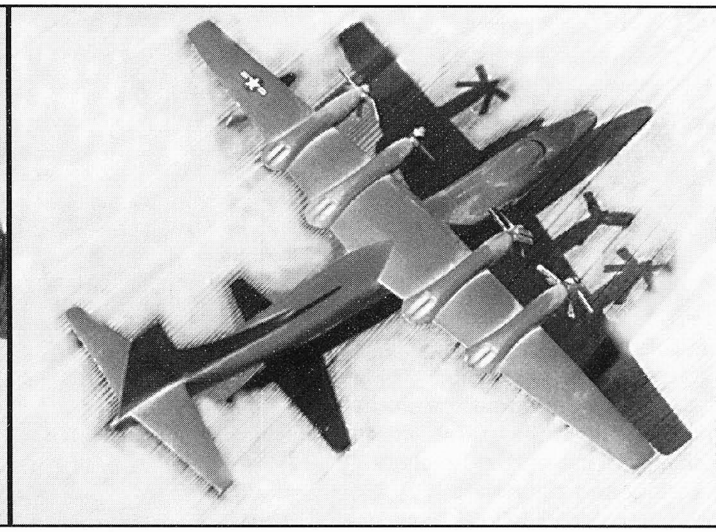




Above, 3-foot long R3Y-2 factory model. (Johnny Knebel)

Below, cast metal 12-inch R3Y-1 factory model. (J. Knebel)





1/72 SCALE COMBAT MODELS R3Y-2 TRADEWIND

The massive Combat Models R3Y Tradewind is impressive with fairly accurate wings and after-fuselage. However, the nose section does not match up favorably with the 1/72nd drawings seen on pages 37 and 38, and would require shortening and reshaping. (photos of completed model generously provided by Combat Models)

HBM 1/200 SCALE RESIN R3Y-2 TRADEWIND & XP5Y-1 CONVERSION

BY THOMAS HEALY;

The 1/200 scale R3Y Tradewind is a solid epoxy resin model with an 8.81 inch wing span. The kit consists of 10 parts. Decals props or clear prop discs must be provided from the spare parts box.

THE R3Y-2:

The R3Y-2 is essentially out of the "bag", and is built as you would any limited production resin kit. As modeled, it represents the R3Y-2 "Caribbean Tradewind" from VR-2, with the air refueling kit installed.

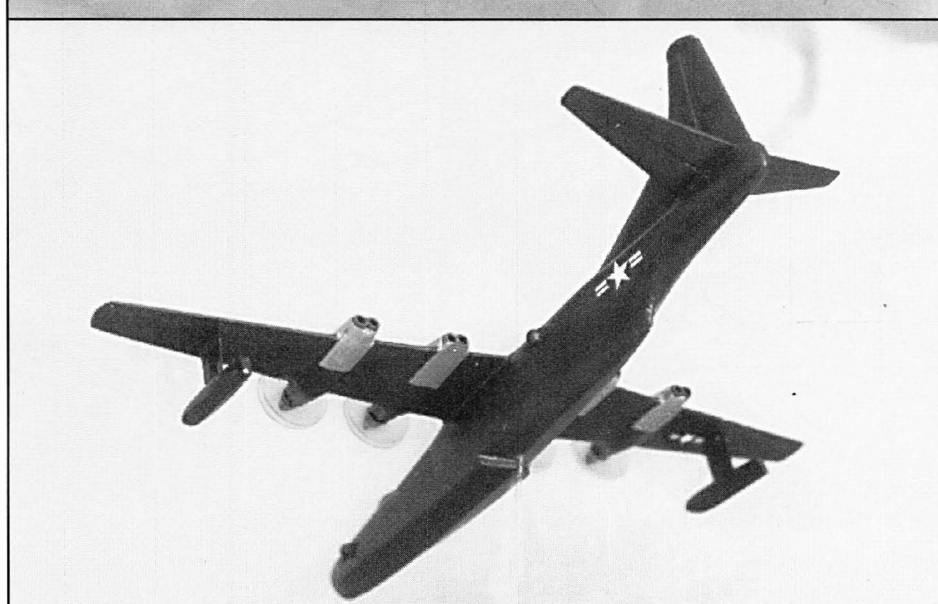
The refueling pods were made from an Airfix Bf. 109G belly tank. One master was built, and 6 plaster-of-Paris half-molds were cast and sealed with fuel-proof model airplane dope before casting the other three pods with automotive Bondo body filler.

THE XP5Y-1 CONVERSION:

The conversion appeared to be easy at first glance, but involved much cutting, filling, shaping and sanding. The rear fuselage and the dorsal fillet on the tail had to be completely reshaped. I cut off the fuselage behind the wing, and shortened it by 3/8". Cut the upper deck straight back from the wing. Re-attach the shortened rear fuselage and then fill and sand to contour. Also shorten the rear fuselage about 3/16" at the very end where the tail turret is. Separate the vertical tail and the dorsal fillet from each other and grind the fillet and upper aft deck to the new shape. Refit the tail and fillet, fill and fair the gaps and add two beam gun turrets.

The forward fuselage was totally reshaped after I sawed off the entire upper decking. I narrowed the forward fuselage's width, and shortened the nose a tad. Using Bondo and green putty a new cabin was formed. Two forward fuselage gun turrets were built up from sprue and putty. The nacelles have to be reshaped and moved aft on the wing. Remove 3/16" off the front of the nacelle front. Install hollow tubes for the P5Y exhausts and build up the nacelle shape with putty. I then used scrap plastic to make the single massive float pylons.

Kits are available from Prof. Ron Crawford, PO Box 23, N. Ferrisburgh, VT, 05743

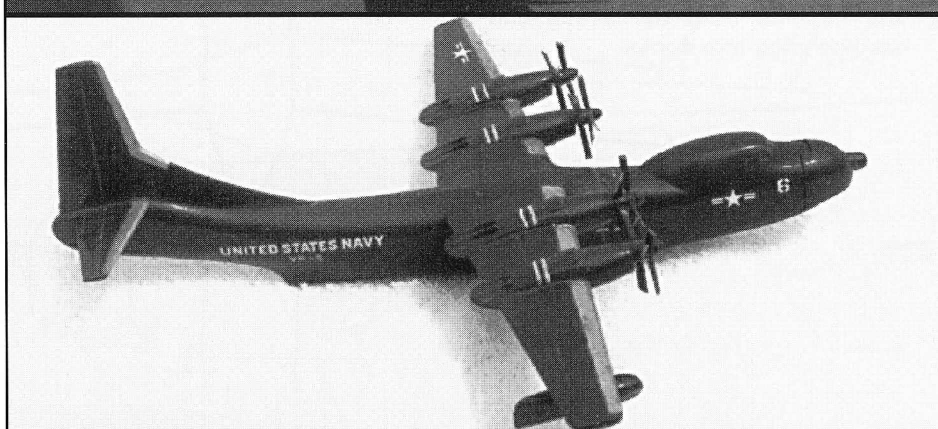


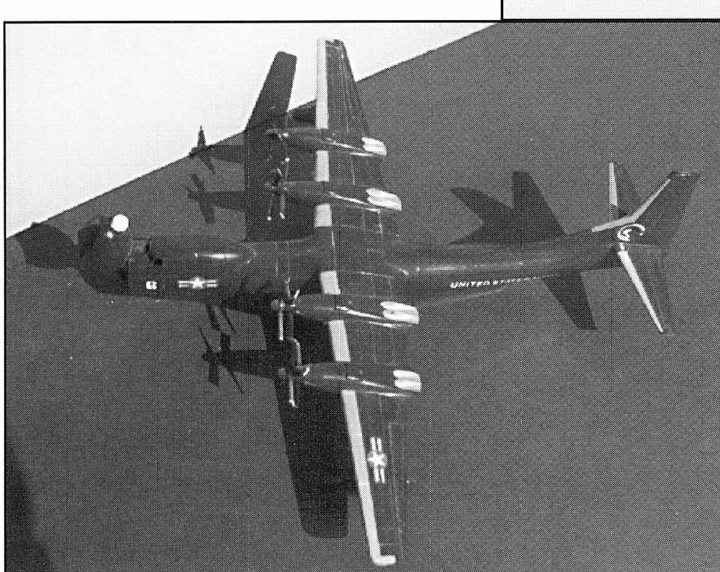
REVELL 1/164 SCALE CONVAIR R3Y-2 TRADEWIND

The old 1950's 1/164th scale Revell R3Y-2 Tradewind kit still holds a lot of charm, but gets few points for accuracy-of-scale or fidelity of detail. The kit has raised rivets and raised outlines for decal placement. Additionally, as was common for small scale models of the time, no cockpit glass was included in the kit. It comes with a hinged bow door, which can be displayed open or closed, and with bow loading ramps. The kit consists of twenty-nine parts, directions and a decal sheet.

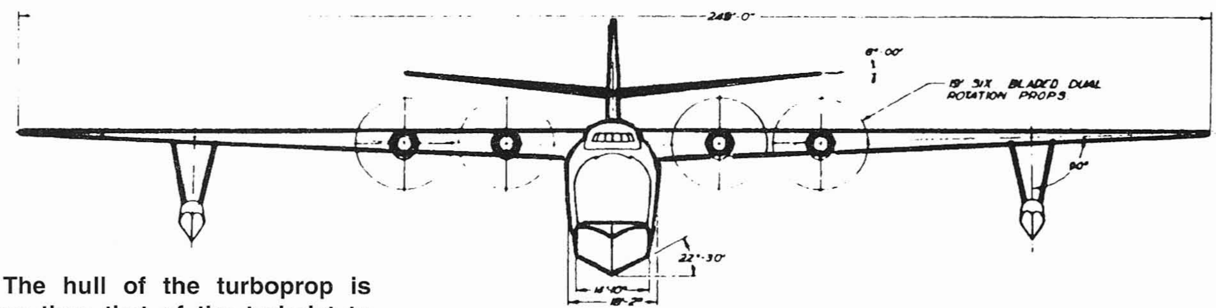
The box art as seen at right is from the original 1950s kit. However, the same box art has been used on each of the two reissues. The kit was available as a reissue from Brazil and on a 1996/97 limited reissue by Revell USA.

The photos of the model with the pelican on the tail show a Tradewind model that was built in the early 1960s, while the one with VR-2 on the rear fuselage was built in 1997 by Tom Healy.





TURBOPROP SEAPLANE LOGISTIC TRANSPORT PROPOSAL

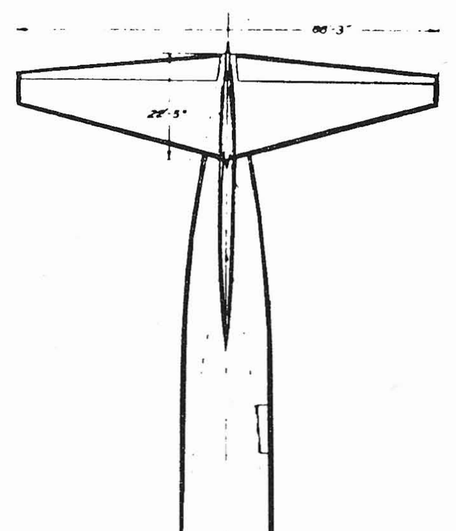


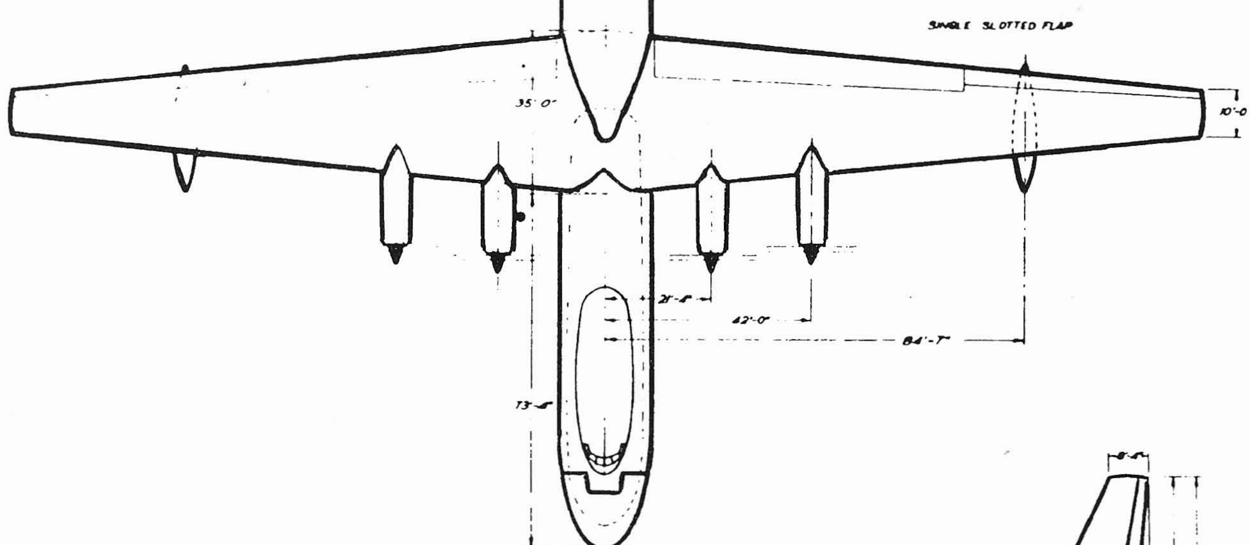
The hull of the turboprop is longer than that of the turbojet to maintain adequate tail length for control and maneuverability with asymmetric power due to engine failure on one side. The longer, larger hull and lighter gross weight of the turboprop reduces the draft at the step permitting beaching in shallower water, a distinct advantage in cold weather operation.

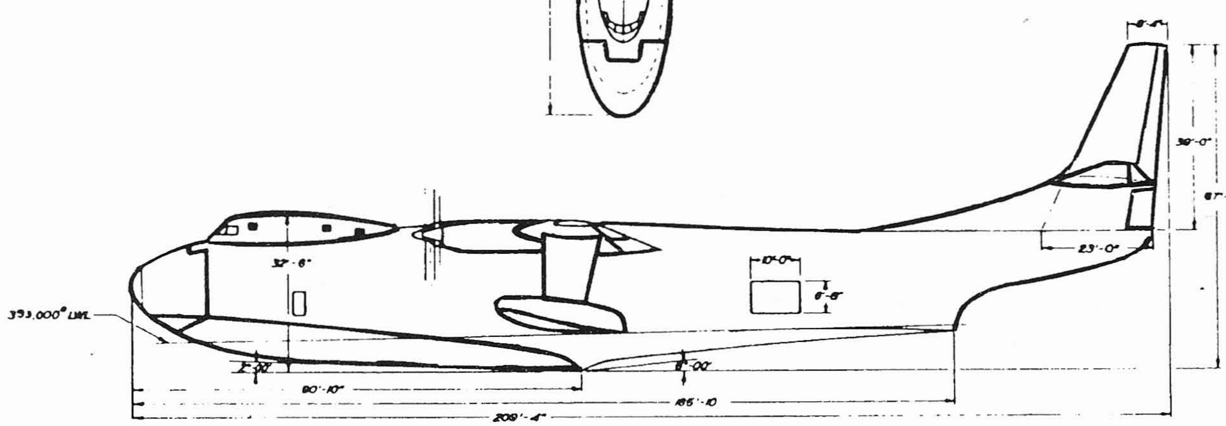
The turboprop airplane was designed for medium high subsonic speeds (M 0.60). Four Pratt & Whitney modified J57 turbojet engines using six-bladed dual rotation propellers. The reversible pitch propellers would assist in retracting the airplane from the beach and maneuvering into docks.

DESIGN DATA:

GROSS WEIGHT	393,000lbs
WING ASPECT RATIO	11
TAPER RATIO	3.5:1
HORZ. TAIL AREA	1,242sq ft
ASPECT RATIO	6
TAPER RATIO	3.5:1
VERT. TAIL AREA	610sq ft
ASPECT RATIO	2.5
TAPER RATIO	2.75:1
LENGTH	209'4"
WIDTH	248'
HEIGHT	67'1"
HULL WIDTH	18'2"
HORZ. TAIL LENGTH	80'3"





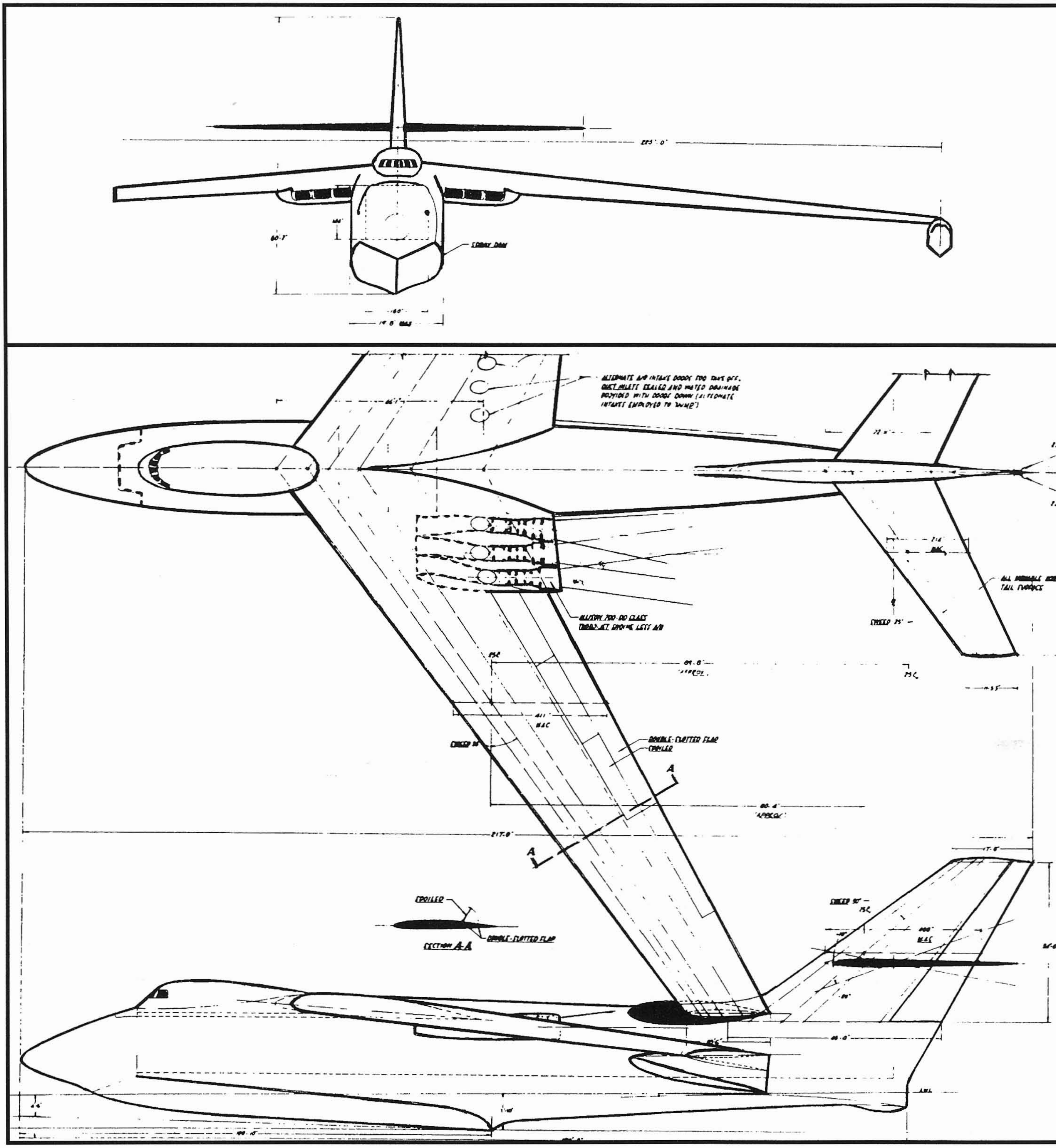


TURBOJET SEAPLANE LOGISTIC TRANSPORT PROPOSAL

The Turbojet Seaplane Logistic Transport was designed for high sub-sonic speeds (M 0.80). The airplane was to be equipped with six Allison type 700-PD engines without after-burners. The engines were to be installed close to the hull to give lower asymmetric thrust effects.

The wide beam, high length-to-beam ratio hull was designed with a long afterbody to give the most efficient hydrodynamic form. The hull was designed for rough water operation and incorporated provisions for tactical operation from beaches, temporary Naval Bases, and seaplane tenders.

The cargo compartment was designed for the M-26 or T-43 tanks, LCVPs, trucks, LVTs DUKWs, combat troops or evacuated personnel. The interior furnishings were des-igned for rapid loading and unloading.



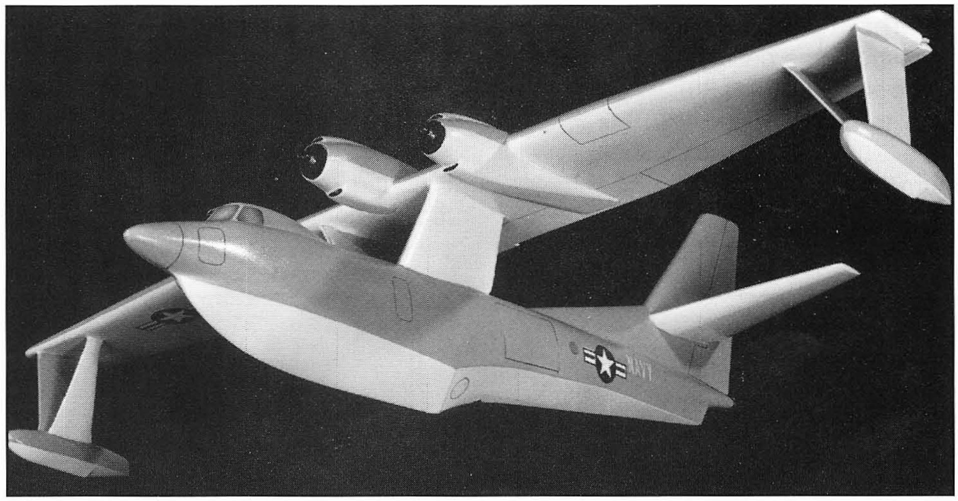
CONVAIR P6Y ASW WARFARE FLYING BOAT PROPOSAL

The missions for this airplane in order of importance were as follows:

1.) Detect, locate and destroy submarines.

2.) Perform barrier patrols, convoy escort, hold down, hunter/killer operations, and area search.

3.) In a search and rescue configuration, rescue personnel from the sea.



DIMENSIONS:

Wing Span	127.5'
Length	121.0'
Height	39.0'
Prop Diameter	16.0'
Wing Area	2,500sq ft
MAC	241"
Root Chord	268"
Tip Chord	158"
Incidence	5°30'
Root Thickness	15%
Tip Thickness	12%

WEIGHTS:

Empty	60,789lbs
Basic	62,428lbs
Combat	94,360lbs
Design	107,640lbs
Max T.O.	116,440lbs

FUEL:

Wing Center Tank	2,400gal
Left Wing Tank	2,300gal
Right Wing Tank	2,300gal
Total	7,000gal

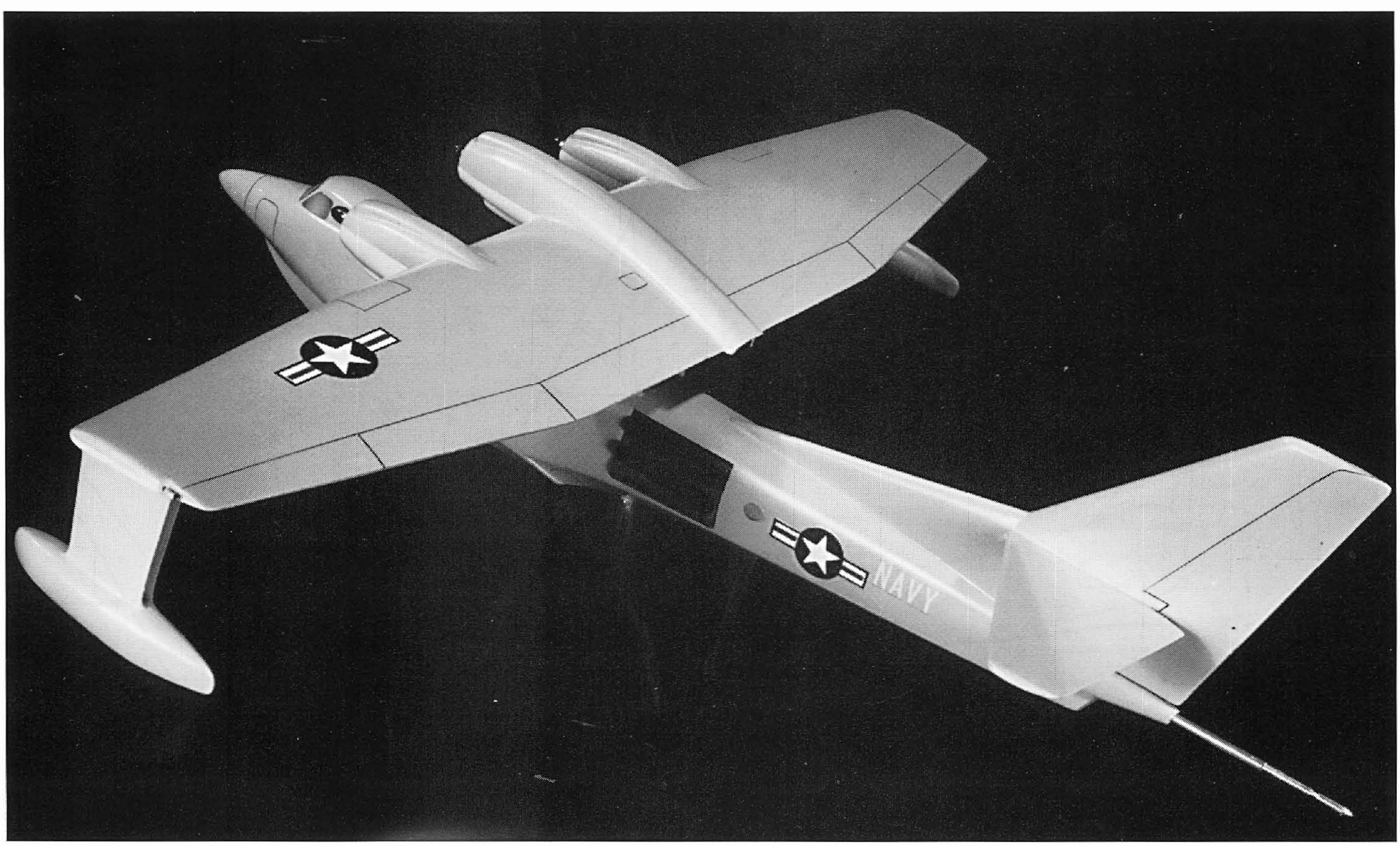
POWERPLANTS:

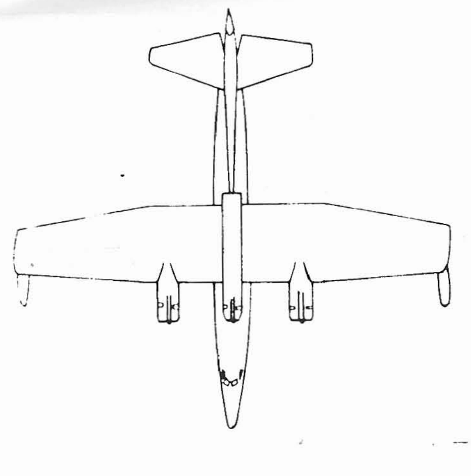
Three R3350-32W Engines (3,700hp)
Two YJ85-GE-1 engines (2,450lb)

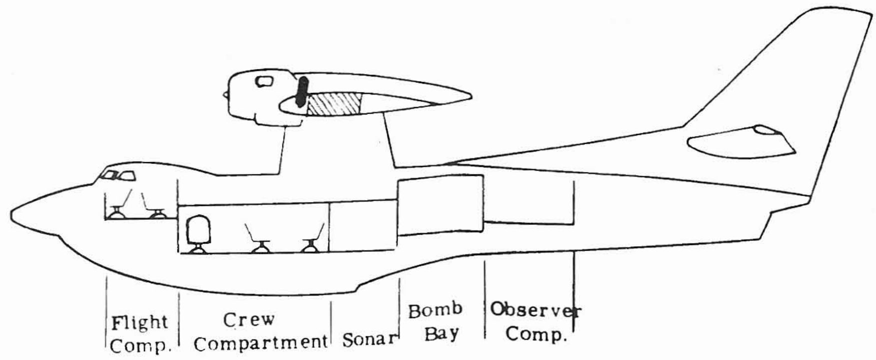
ARMAMENT:

A 8-EX-2 & 8-5" HVAR
B 2-LULU & 4-EX-2 & 8-5" HVAR
C 1-MK90 & 4-EX-2 & 8-5" HVAR
D 4-MK43 & 2-MK34 & 8-5" HVAR
E 8-MK43 & 8-5" HVAR
F 6-MK54 & 6-MK43 & 4-5" HVAR
G 6-MK54 & 6-EX-2 & 4-5" HVAR
H 2-LULU & 4-MK43 & 8-5" HVAR
J 1-MK90 & 4-MK43 & 8-5" HVAR
K 8-MK54 & 8-5" HVAR
L 6-Mk54 & 4-MK43 & 2-MK34 & 4-5" HVAR

The P6Y was to be powered by 3 Pratt & Whitney R3350-32W engines with two General Electric YJ85-GE-1 turbojets mounted in the rear engine nacelle of the center engine. The aircraft was to be equipped with a MAD boom.



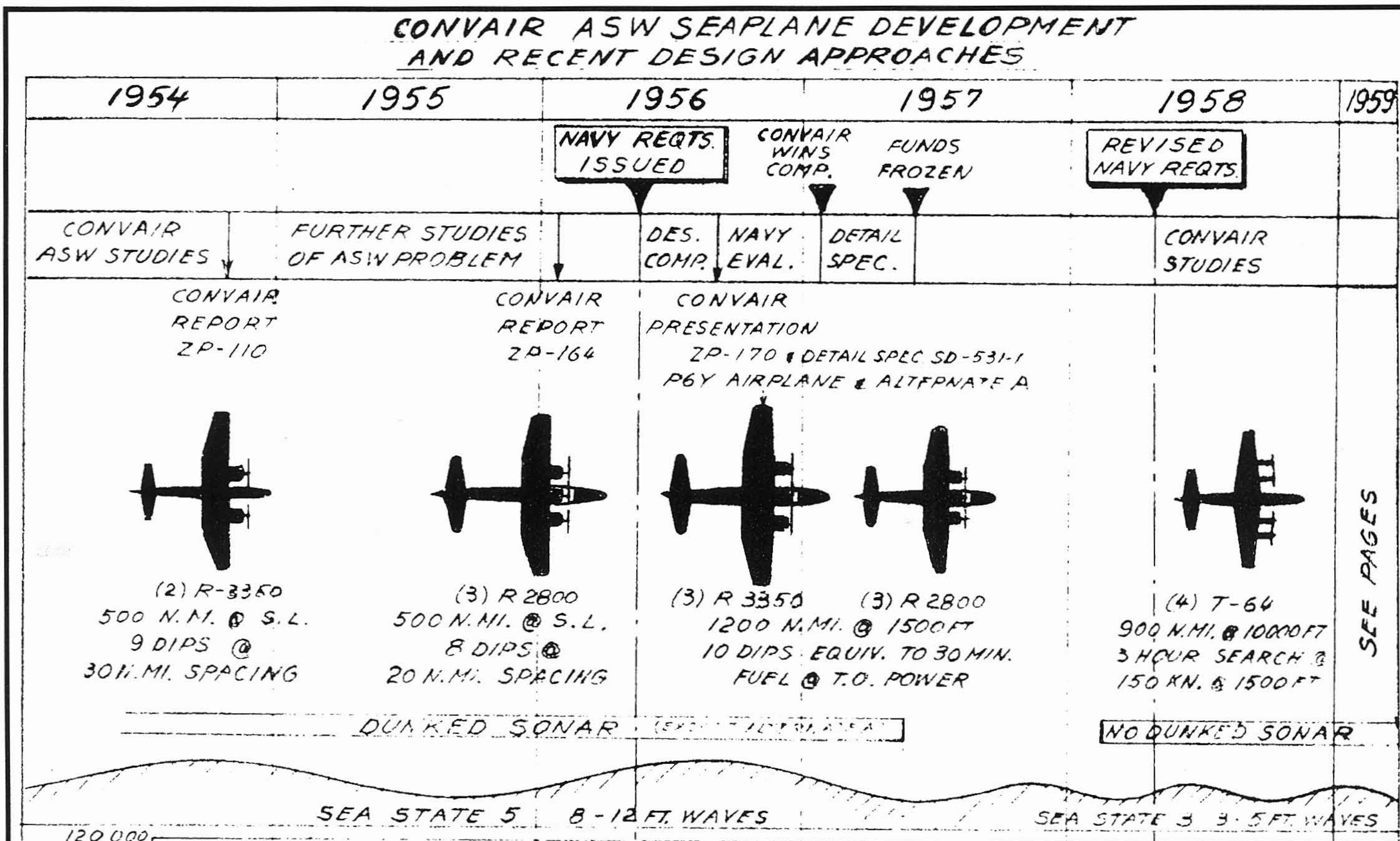




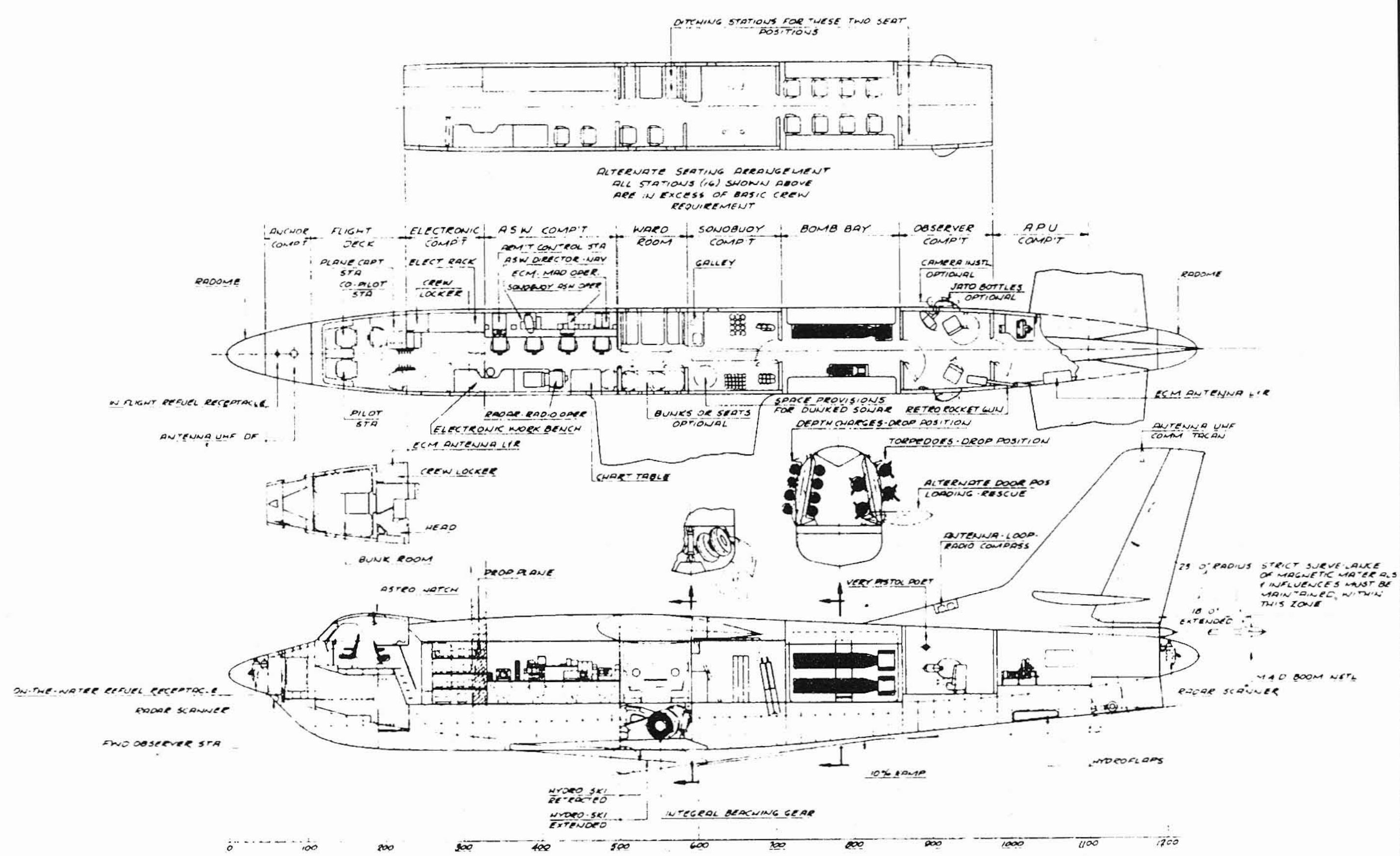
LOADING AND PERFORMANCE SPECIFICATIONS

TAKEOFF WEIGHT	LBS.	107,640	104,362	108,232
Fuel	lbs.	33,200	33,200	42,000
Payload	lbs.	8,208	4,930	-0-
Wing loading	psf	43.1	41.8	43.3
Stall speed - power off *	kts	55.1*	54.4 *	55.5*
Takeoff time at S. L. - calm *	sec.	22.5	19.3	23.1
Max. speed/altitude	kts/ft.	234.0/19,600	236.2/19,650	233.5/19,600
Rate of climb at S. L.	fpm	1025	1090	1015
Time: S. L. to 10,000 ft.	min.	11.0	10.3	11.2
Time: S. L. to 20,000 ft.	min.	27.3	25.2	27.7
Service Ceiling (100 fpm)	ft.	24,600	25,300	24,500
Combat range	N. Mi.	2,953		3,881
Average cruising speed	kts	141.0		148.1
Cruising altitude	ft.	1,500		5,000
Combat radius	N. Mi.	1,182	1,200	
Average cruising speed	kts.	141.0	142.0	
COMBAT WEIGHT	LBS.	94,360	90,642	91,432
Engine power		Military	Military	Military
Fuel	lbs.	20,580	20,580	25,200
Combat speed/combat altitude	kts/ft.	249.0/1500	249.5/1500	256.0/5000
Rate of climb/combat altitude	fpm/ft.	1720/1500	1810/1500	1620/5000
Combat ceiling (500 FPM)	ft.	22,900	23,800	23,600
Rate of climb at S. L.	fpm	1,710	1,800	1,780
Max. speed at S. L.	kts.	246.5	246.5	246.5
Max. speed/altitude	kts/ft.	265.5/19,400	266.2/19,400	266.0/19,400
LANDING WEIGHT	LBS.	75,525	71,537	67,762
Fuel	lbs.	2,185	2,175	2,630
Stall speed-power off *	kts.	46.2	45.0	43.8
Stall speed-with approach power*	kts.	40.4	38.7	37.1

		Minimum Required	Desired
Design Gross Weight (1)	Lbs.	95,000	95,000
Sea State		3	5
Maximum Speed	Kn.	325	385
Cruise Speed	Kn.	250	350
" Alt.	Ft.	10,000	
Search Speed (3)	Kn.	510	150
" Alt.	Ft.	1,500	1,500
Landing Speed	Kn.	60	60
Combat Radius (2)	N. Mi.	900	900
Time on Station	Hrs.	3	3
Integral Beaching Gear		Yes	Yes



FINAL 1958 P6Y STYLE ASW SEAPLANE DESIGN (ZP-278)

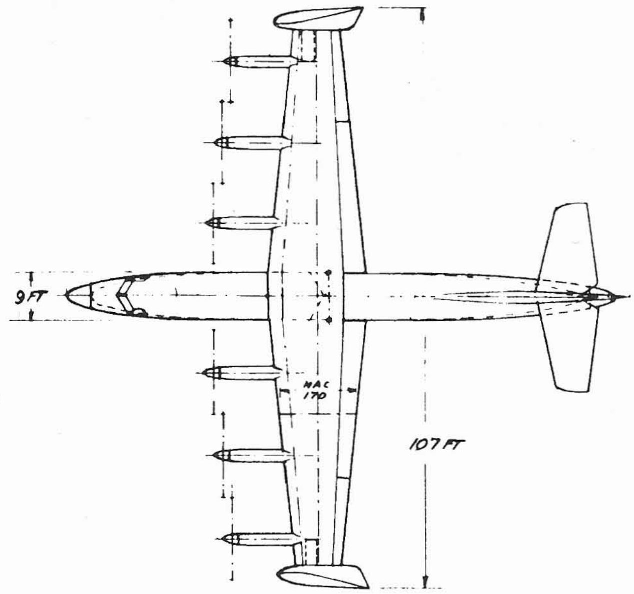


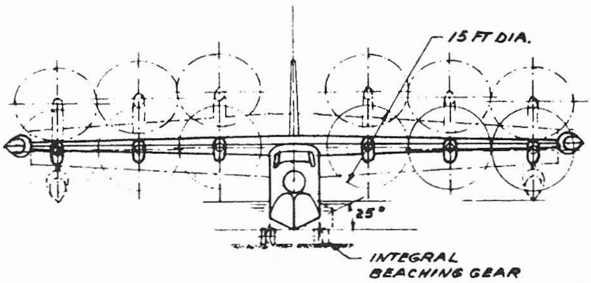
TYPICAL ASW SEAPLANE
WITH SLIPSTREAM EFFECT

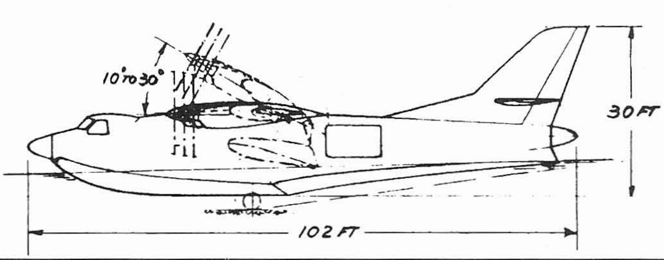
WING AREA	1250 FT²
GROSS WEIGHT	88 700 LBS
HANDLING WEIGHT	58 700 LBS
CRUISE ALTITUDE	10 000 FT
V_{MAX}	355 KN
V_{CRUISE}	250 KN
V_{LOITER}	150 KN
V_{LAND} WITH 50% POWER @ COMBAT WT.	60 KN.
$V_{T.O.}$	45 KN.
TAKE-OFF TIME	9 SEC.
COMBAT RADIUS	900 N.M.
TOTAL MISSION TIME	10.5 HRS

ENGINES: 6 G.E. T-64 TURBOPROPS

FEATURES: TILTING WING
INTEGRAL BEACHING GEAR





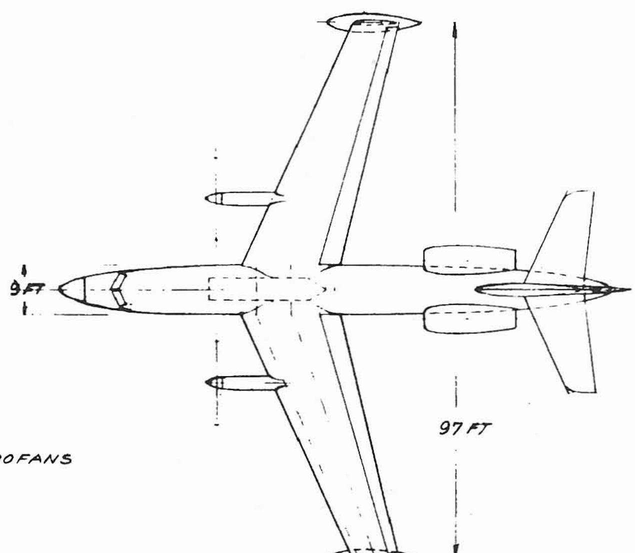


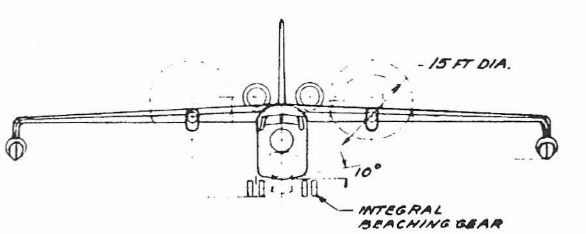
TYPICAL ASW SEAPLANE
WITH BOUNDARY LAYER CONTROL
MIXED POWER PLANTS

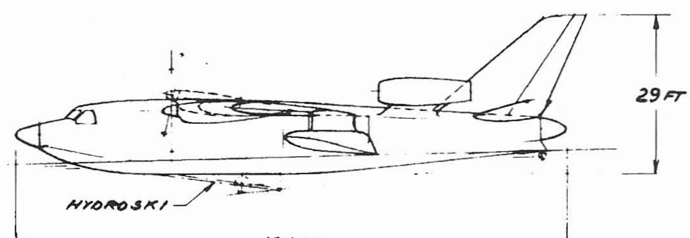
WING AREA	1250 FT²
GROSS WEIGHT	100 700 LBS
HANDLING WEIGHT	59 700 LBS
CRUISE ALTITUDE	35 000 FT
V_{MAX}	488 KN
V_{CRUISE}	420 KN
V_{LOITER}	150 KN
V_{LAND}	
$V_{T.O.}$	
TAKE-OFF TIME	
COMBAT RADIUS	900 N.M.
TOTAL MISSION TIME	8.5 HRS

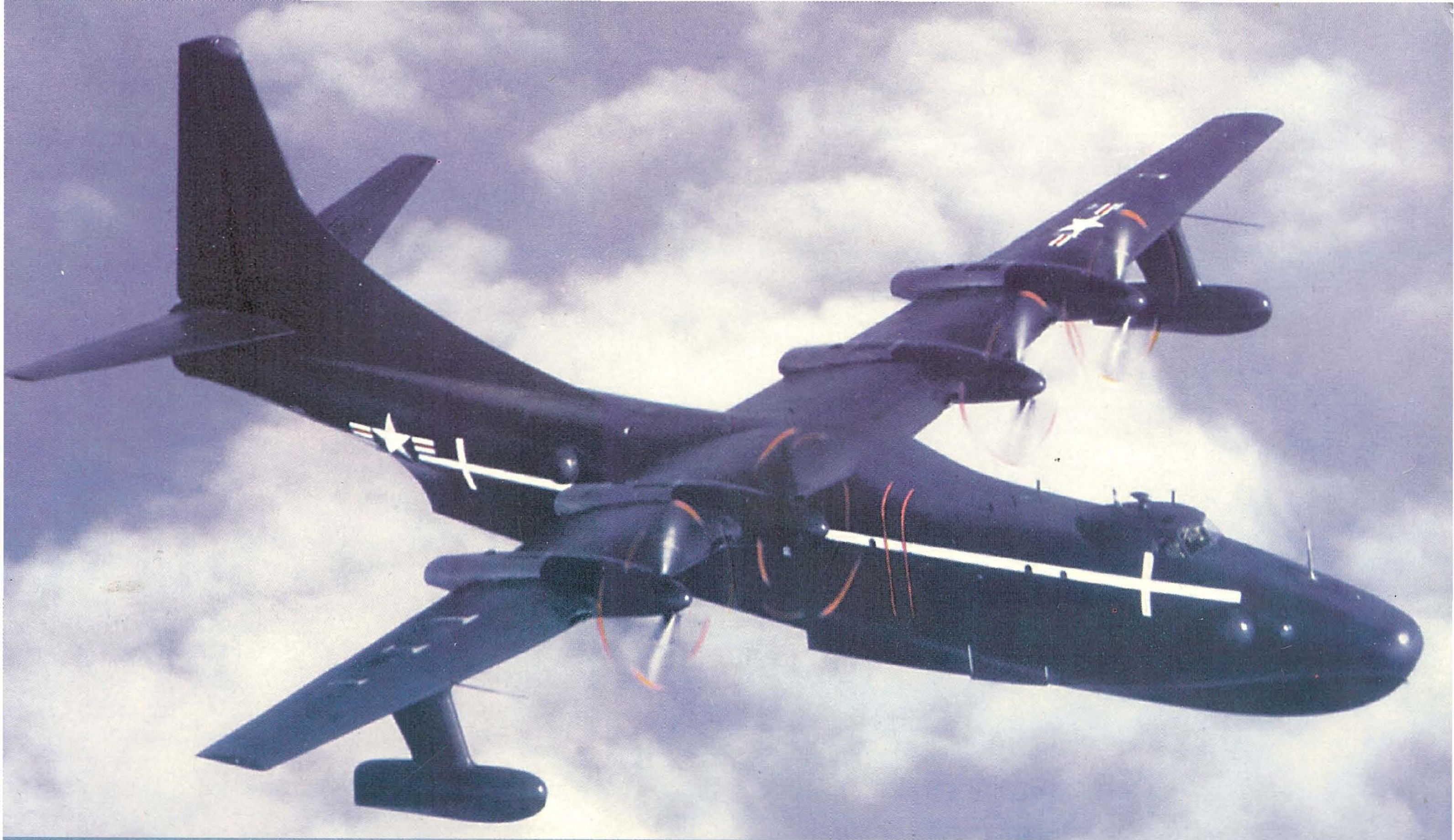
ENGINES: 2 G.E. T-64 TURBOPROPS
2 G.E. X-220 OR P&W. JT3 TURBOFANS

FEATURES: BLC
HYDROSKI
INTEGRAL BEACHING GEAR







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